THE OFFICE FOR ACADEMIC AFFAIRS

2012-2013 PROGRAM REVIEW

DEPARTMENT OF GEOLOGICAL SCIENCES

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SPRING 2013
GENERAL INFORMATION FOR 8-YEAR ACADEMIC PROGRAM REVIEW (Form 2)
http://graduate.ua.edu/apr/formmain.html

**Directions:** The information requested on this form is essential for academic program review. In some cases, you provide the information directly below the question; in other cases, you provide the information as an attachment.

### 1. Strategic Plan

Include as Attachment 1 the department’s Strategic Plan.

### 2. Assessment Reports

Include as separate Attachments 2, 3, etc., PDF’s of your WEAVE “Detailed Assessment Reports” (DAR) for each undergraduate and graduate degree program as submitted for the 7/15/12 WEAVE reporting deadline.

### 3. Assessment Evaluation

Include as your next numbered attachment the Assistant to the Provost for Assessment’s evaluation of your 7/15/12 WEAVE assessment reports for your degree programs.

### 4. Tenure and Promotion Criteria

Include a numbered final attachment with your department’s tenure and promotion criteria.
5. Faculty Assignment by Rank

Faculty Assignment by rank for most recent fall semester (Fall semester 2012)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Number of Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>5*</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>4</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>4</td>
</tr>
<tr>
<td>Instructor</td>
<td>1**</td>
</tr>
<tr>
<td>Other</td>
<td>1 Temporary (3-year) Assistant Prof</td>
</tr>
<tr>
<td>Total Number of Faculty</td>
<td>13</td>
</tr>
</tbody>
</table>

Number of Graduate Faculty
- Full: 14
- Associate: 0
- Temporary: 33

Note. Faculty CVs are to be made available to the committee and consultant. Please let John Schmitt and OIRA know if they are already available online, will be posted publicly or privately, will be available as PDF files, etc.

* One full professor, Dr. Chunmaio Zheng has been spending one semester per academic year in the Peking University since Fall, 2010.

** Teaching only one course per semester for the DGS, one course per semester for the Department of Anthropology and two courses per semester for the Blount College.

6. Faculty Publications in Last 5 Years

List the number of faculty publications in refereed scholarly journals over the last 5 years and compute the ratio of publications to faculty. (This section may be modified appropriately if scholarly journals are not of great importance in the field and are not a high priority in the department’s tenure and promotion guidelines).

Number of publications are directly received from the UA College of Arts and Sciences Faculty Activity Reports.

- 1 year ago is from March 31, 2012 to April 1, 2011
- 2 years ago is from March 31, 2011 to April 1, 2010
- 3 years ago is from March 31, 2010 to April 1, 2009
- 4 years ago is from March 31, 2009 to April 1, 2008
- 5 years ago is from March 31, 2008 to April 1, 2007
<table>
<thead>
<tr>
<th></th>
<th>Number of Faculty</th>
<th>Number of Publications</th>
<th>Ratio (publications/faculty)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years ago</td>
<td>13</td>
<td>24</td>
<td>1.85</td>
</tr>
<tr>
<td>4 years ago</td>
<td>12</td>
<td>27</td>
<td>2.25</td>
</tr>
<tr>
<td>3 years ago</td>
<td>14</td>
<td>33</td>
<td>2.36</td>
</tr>
<tr>
<td>2 years ago</td>
<td>14</td>
<td>32</td>
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<tr>
<td>1 year ago</td>
<td>14</td>
<td>29</td>
<td>2.07</td>
</tr>
</tbody>
</table>

**Additional Publications** (This section also may be modified, as noted above, to reflect publication priorities in the discipline).

<table>
<thead>
<tr>
<th></th>
<th>Books</th>
<th>Book Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years ago</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>4 years ago</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3 years ago</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2 years ago</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>1 year ago</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Referred abstracts by the DGS faculty.**

Rationale: Geological Science research findings are first reported in regional, national and international meetings. Therefore the DGS faculty regularly attends these meetings and report their findings in the form of an Oral or Poster presentation to other earth scientists. The abstracts of these presentations are published in an abstracts with programs volume preceding the conferences.

<table>
<thead>
<tr>
<th></th>
<th>Abstracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years ago</td>
<td>41</td>
</tr>
<tr>
<td>4 years ago</td>
<td>57</td>
</tr>
<tr>
<td>3 years ago</td>
<td>58</td>
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<tr>
<td>2 years ago</td>
<td>59</td>
</tr>
<tr>
<td>1 year ago</td>
<td>72</td>
</tr>
</tbody>
</table>
### 7. Citation Data

Provide a table showing each faculty member’s publication **citation data** over the last 5 years, in a way that is typical for your discipline. *If citation indices are unavailable in the discipline, provide other evidence of the frequency of faculty research citations.*

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Citations Since 2007</th>
<th>Source</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aharon, Paul</td>
<td>1225</td>
<td>Google Scholar</td>
<td></td>
</tr>
<tr>
<td>Andrus, Fred</td>
<td>217</td>
<td>Google Scholar</td>
<td></td>
</tr>
<tr>
<td>Çemen, Ibrahim</td>
<td>341</td>
<td>Google Scholar</td>
<td></td>
</tr>
<tr>
<td>Donahoe, Rona</td>
<td>211</td>
<td>Google Scholar</td>
<td></td>
</tr>
<tr>
<td>Goodliffe, Andrew</td>
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<td>Google Scholar</td>
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<tr>
<td>Ewing, Ryan</td>
<td>255</td>
<td>Google Scholar</td>
<td>Since 2008</td>
</tr>
<tr>
<td>Hansen Samantha</td>
<td>99</td>
<td>Google Scholar</td>
<td></td>
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<tr>
<td>Huerta Alberto</td>
<td>151</td>
<td>Web of Science</td>
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<tr>
<td>Robinson, Delores</td>
<td>491</td>
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<td></td>
</tr>
<tr>
<td>Stowell, Harold</td>
<td>333</td>
<td>Google Scholar</td>
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<tr>
<td>Tick, Geoffrey</td>
<td>77</td>
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<td></td>
</tr>
<tr>
<td>Yuehan Lu</td>
<td>14</td>
<td>Web of Science</td>
<td>Since 2009</td>
</tr>
<tr>
<td>Zheng, Chunmiao</td>
<td>1790</td>
<td>Google Scholar</td>
<td></td>
</tr>
</tbody>
</table>
8. Teaching Loads and Advisement

Briefly describe the undergraduate and graduate teaching loads and advising responsibilities of faculty for the past academic year.

**Teaching Loads**

The DGS faculty members are expected to teach three courses per academic year. This could be achievement either as 1 and 2 or 2 and 1. However, they are expected to teach at least one course per semester unless they are on sabbatical or an arranged leave from the UA. The teaching load can be a combination of undergraduate and graduate courses and/or a cross-listed graduate/undergraduate course. Since the fall 2010 semester undergraduate and graduate advisors are assigned 1 and 1 teaching loads so that they can spend more time in undergraduate and graduate advising. In addition, the Geo: 101 (Dynamic Earth) coordinator is given “1 and 1” teaching load to provide the coordinator more time in coordinating GTAs teaching Geo: 101 lab sections and faculty/instructors teaching different sections of Geo: 101. The department plans to adopt a new policy where research active faculty members can choose to teach “1 and 1” when they have large (over $250,000/year) sponsored research grants. This will provide them more time to achieve their research responsibilities.

**Undergraduate Advising**

Dr. Fred Andrus is the undergraduate advisor of DGS. He conducts most of the undergraduate advising in the department. Dr. Andrus is given one course release per year to serve as departmental undergraduate advisor. He meets with most undergraduate students during registration to determine the courses they need to take to graduate in a timely manner.

**Graduate Advising**

Dr. Andrew Goodliffe is the graduate advisor of DGS. He coordinates graduate students application and admittance process. Dr. Goodliffe is given one course release per year to serve as departmental graduate advisor. Most graduate students are assigned a graduate advisor before they start our graduate program. The graduate advisor and graduate student work together towards a degree plan during student’s first semester in the department. Dr. Goodliffe also keeps track of graduate students progress so that they can graduate in a timely manner.
GENERAL INFORMATION

ATTACHMENTS

1. Attachment 1, DGS 5-year Strategic Plan
4. Attachment 4, Assessment Critique
5. Attachment 5 Abbreviated DAR for Assessment Critique
6. Attachment 6, DGS Tenure and Promotion Guidelines
7. Attachment 7, DGS Faculty CVs as of March 31, 2012
   in Alphabetic Order (Available Upon Request)
Department of Geological Sciences
5-year Strategic Plan

Mission Statement

The Mission of the Department of Geological Sciences (denoted herein as DGS) is to provide the highest quality education to students at the undergraduate and graduate levels. The department is committed to providing academic and outreach programs that benefit our students, the scientific community, and society. The DGS is dedicated to the scientific study of all aspects of geoscience, from fundamental processes that shape the Earth, to knowledge that benefits society. We provide service to the scientific community and the public, and assist in the sound and sustainable economic development of the region, state, and nation.

Vision Statement

The University of Alabama’s (denoted herein as UA) vision is to be a student-centered research university. The Department of Geological Sciences supports this vision and is highly committed to incorporate student-centered learning and research activities throughout all aspects of DGS programs. Our goal is to become one of the leading Geoscience departments in the country, well-recognized for its academic programs, cutting-edge research, and production of outstanding students who become future leaders in industry, academia, and government. By building on our present strengths, we seek to gain national recognition as one of the top 40 U.S. geoscience departments at a public university by the fall semester of 2018.

Our undergraduate programs provide the highest-quality undergraduate education, emphasizing critical thinking, problem solving, scientific reasoning, mathematical and communication skills, together with a comprehensive fundamental understanding of the geological sciences. The DGS provides a comprehensive active learning instructional program for our students. Graduate education is an integral part of our robust and innovative research programs. Our M.S. degree program equips students with the state-of-the art skills necessary to carry out independent geological research and prepares them for either a Ph.D. program or employment in a specialized area of the geological sciences. Our Ph. D. program aims to develop Ph.D. candidates’ ability to design and lead original research, and ask questions that will shape the future of science. The DGS research programs seek to make scientific breakthroughs in our understanding of the Earth and to develop practical applications that benefit society. The faculty members will continue to aggressively seek
outside funding to produce cutting-edge geological research.

**Departmental Self-Analyses**

Based on the Chair’s discussions with DGS faculty, staff, and students during the last three years, and more recent discussions among the Department’s Vision and Planning Committee members (Cemen, Donahoe, Goodliffe, Andrus, and Perez-Huerta), we have identified internal and external factors that would facilitate or presently hinder our continued growth and development during the next 5 years.

The departmental self analysis first involved specifying the objectives of the department (i.e., strategic goals), and then identifying the factors (i.e., strengths/weaknesses, areas of opportunity, and potential threats) that are either favorable or unfavorable to the DGS, in terms of achieving our strategic objectives and goals.

The following is a detailed description of departmental strategic goals, action plan, strengths and focus, and areas of opportunities as well as needs.

**Departmental Strengths:**

- A defined vision and multilevel strategic goal aligned with The University of Alabama’s vision to be a student-centered research university.

- A research active faculty. In recent years the DGS has steadily increased its extramural funding for research activities while maintaining a steady increase in student enrollment.

- Programs and curricula providing students with 21st century knowledge, technical skills, and problem-solving abilities.

- Diverse teaching programs in current and emerging fields of the geological sciences providing entrance to graduate programs and to the energy, mining, and environmental industry workforce regionally, nationally, and internationally.

- A diverse faculty self-organized into three coherent research groups in Energy (Petroleum/Sedimentary Geology, Structural Geology) Environment (Hydro/Environmental Geology, Environmental Geochemistry) and General Geology (Tectonics, Igneous/Metamorphic Petrology).

- Multiple research collaborations amongst faculty in the department, researchers in other departments at the UA (e.g., Biological Sciences, Chemistry, Geography, Chemical Engineering, Anthropology) and centers (i.e., MINT and Center for Sedimentary Basin...
Studies, as well as other national and international institutions, such as the Alabama Geological Survey and Peking University).

**Departmental Opportunities:**

- Continue to increase the diversity of DGS faculty, staff, and students through strategic, aggressive recruitment efforts.
- Develop additional interdisciplinary research and educational programs with other UA departments and other universities/institutions nationally and internationally.
- Expand the faculty: Rapidly replace junior faculty who have recently left the University and hire new faculty using cluster hires in targeted, cutting-edge areas to complement and enhance existing department research programs, expand contract and grant success, and to respond to the need for increased credit hour production and advising duties required by increasing student enrollments.
- Enhance career opportunities and professional development activities for DGS undergraduates and graduate students by actively encouraging student recruitment by academia, research institutions, and the energy, mining, and environmental industries.
- Revise DGS Tenure, Promotion and Retention guidelines to increase faculty research productivity, as evidenced by increased extramural research funding and scholarly activities such as publications in prestigious geoscience journals.
- Enhance research capabilities and infrastructure (i.e., core facilities for state-of-the-art analytical instruments and equipment).

**Departmental Challenges**

- Lack of sufficient laboratory space in the department which is vital to facilitating an increase in research productivity and student-centered instruction. This is in part due to the lack of available vacant space in Bevill Building to expand the DGS laboratory facilities and teaching areas.
- Lack of shared major research instrumentation/core facilities, such as an MC-ICP-MS-LA and a clean room.
- Low retention of successful DGS tenure-track Assistant and tenured Associate Professors. The DGS has lost three Assistant Professors in the last three years.
- Insufficient 200-level geology courses in the undergraduate curriculum.
• Too few postdoctoral fellows to promote a robust research environment for graduate students and faculty.

• Too few endowed professorships and postdoctoral fellowships with endowed research funds to promote a sustainable research environment for graduate students and faculty.

• Lack of support personnel needed to deliver alternative instructional approaches (e.g., virtual labs, computer-oriented intro courses for non-majors, and high level computer software-oriented courses).

**Areas that Need Improvement:**

• Starting salaries and start up packages are not competitive with national norms to attract the best candidates in highly competitive research areas.

• Noncompetitive (below average) graduate teaching assistantship (GTA) stipends.

• Reliance of research activity and instrument acquisition on increasingly limited federal funds.

**Proposed Departmental Strategic Goals**

• Increase the visibility and recognition of our research and educational programs such that it results in an increase in National Rankings such as U.S. News and World Report Earth Science Department Rankings for the UA Department of Geological Sciences. Our goal is to be ranked within the top 40 Earth Science Departments by the fall 2018 semester (Table 1).

• Maintain instructional rigor and quality while increasing student credit hour production as the UA’s overall student enrollment increases to the target of 35,000 students.

• Increase the undergraduate enrollment to 120 geology majors, and graduate enrollment to 80 (50 M.S. and 30 Ph. D. degree students) and generate approximately 15,000 SCH by the fall 2018 semester.

• Increase our research faculty size to total 21 teaching scholars of the highest caliber by the fall 2018 semester.

• Add one teaching faculty position by the fall 2014 semester.

• Enhance career opportunities and professional development activities for DGS undergraduate majors by making necessary changes in the undergraduate curriculum that will better fit the needs of our students.
• Enhance career opportunities and professional development activities for M.S. and Ph.D. students by making our graduate curriculum better fit the needs of our graduate students.

• Continue to increase diversity of DGS faculty, staff, and students.

• Recruit and retain outstanding faculty, staff, and students.

• Continue to increase faculty research productivity as evidenced by increased extramural research funding.

• Add one technician position by the fall 2014 semester.

• Enhance research capabilities and infrastructure; i.e., maintain and update core facilities for state-of-the art instrumentation.

• Increase the available laboratory and office space for the increased number of faculty and students in the Department.

• Develop additional interdisciplinary research and educational programs with university and industrial partners.

• Initiate a new departmental endowment fund raising campaign.

**Proposed Action Plans for Departmental Strategic Goals**

• **Increase the visibility and recognition of our research and educational programs such that it results in an increase in National Rankings such as U.S. News and World Report Earth Science Department Rankings for the UA Department of Geological Sciences.** Our goal is to be ranked within the top 40 Earth Science Departments by the fall 2018 semester (Table 1).

**Action Plan:** DGS faculty are already encouraged to take research sabbaticals to develop collaborations, gain new training and skills, write and submit research manuscripts, and attend national and international conferences and workshops wherever feasible in order to be as competitive as possible in the research arena.

The DGS will continue to request tenure track faculty positions at all levels (Assistant to Full Professor) so as to hire competitive research active faculty who are also dedicated to excellence in teaching. For example, the DGS has successfully recruited new faculty members who are funded extramurally by NSF during their first years as Assistant Professors. These new faculty members, Drs. Samantha Hansen and Ryan Ewing, are also are teaching undergraduate
and graduate courses in the Department. Dr. Hansen was recently awarded the prestigious NSF CAREER Grant, the first in the history of the Department.

- Maintain instructional rigor and quality while increasing student credit hour production as the UA’s overall student enrollment increases to the target of 35,000 students.

**Action Plan:** The Department of Geological Sciences is conducting a multi-level approach to all our program activities to maintain instructional rigor and quality in response to student enrollment increase in to the University of Alabama.

1) We have assigned a faculty member to coordinate the GEO 101 laboratory sections. The faculty member is given one course released time per year to coordinate the GTAs who are teaching the GEO 101 labs. This allows us to maintain a high instructional level of quality in all lab sections. We have established open laboratory sessions twice each week for students who have either missed the previous week’s lab or who are having difficulty finishing the lab assignment. The recitation sections are designed to provide “student-centered” learning, despite the increased class sizes required to meet student demand (two and three sections of GEO 101 have 260 students enrolled in fall and spring semesters, respectively). All new faculty members hired into the College of Arts and Sciences (A&S) are expected to participate in the A&S Learner-Centered College Workshops during their first year on campus.

The Undergraduate Program Committee provides recommendations to the Chair for changes that can be implemented to further improve introductory-level geology instruction. Moreover, the Committee is also working on other recommendations to modernize our curriculum (please see Appendix 1).

2) We will introduce a new 200-level geology course to accommodate the needs of UA undergraduate students, especially geology majors. This course will provide a more in-depth introduction to geological principles, freeing up more time to go into greater depth in higher-level courses. This class will improve student learning, and assessment of that learning, by establishing a uniform and rigorous introduction to the central foundations of geology that will be developed further in upper-division core classes.
• Increase the undergraduate enrollment to 120 geology majors, and graduate enrollment to 80 (50 M.S. and 30 Ph. D. degree students) and generate approximately 15,000 SCH by the fall 2018 semester.

**Action Plan:** Active recruiting has resulted in nearly doubling the number of majors since the last external review. Introductory classes have been the focus of these efforts. With an increase in faculty size and more introductory classes offered, expansion of the major will continue to outpace the overall growth of enrollment in the University of Alabama.

The DGS faculty will continue to actively recruit both undergraduate and graduate students in the state, nation and the world.

• Increase our research faculty size to total 21 teaching scholars of the highest caliber by the fall 2018 semester.

**Rationale:** The DGS provides a comprehensive active learning program. As stated in our mission statement, our goal is to become one of the leading Geoscience departments, well-recognized for education, cutting edge research, and outstanding students who become future leaders in industry, academia, and government. By building on our present strengths, we seek to gain national recognition as one of the top 40 departments at a public university by the fall semester of 2018. Most geoscience departments (Table 1) within the top 40 have over 20 faculty members. In order to reach our teaching and research goals we would like to increase our faculty size to 21 faculty members by the fall, 2018 semester. Also important to note is that the DGS has one of highest graduate students per faculty member ratio in the country (Table 2). The department has almost 4.5 graduate students per faculty while the national average for well recognized graduate programs is 2.6 graduate students per faculty

**Action Plan:** In order to reach 21 faculty members by fall, 2018, we propose to hire 6 new faculty members. Following a faculty discussion during our recent retreat before these start of the fall, 2012 semester, the following speciality areas were seen as key areas for development in the coming years that have a high potential for significant scientific contributions. These positions will enchance our research and teaching capability. The faculty will be making decisions to determine which of the following positions will be filled, with a preference for the creation of cohesive research groups within the DGS and within the University of Alabama.
The proposed new specialities are:

- **Geodynamicist/computational geoscientist** to replace Dr. Tim Masterlark who left UA in the summer of 2012.

  **Rationale:** This position was vacated by the departure of Dr. Tim Masterlark. This position is critical to the training of undergraduate and graduate geology majors, to support the Department’s commitment to introductory geology instruction, and to continue the Department’s successful research program in geophysics, hydro/environmental geology and tectonics. Geodynamics and computation geology are integral parts of the geological sciences. It is essential to understand how the earth’s crust behaves during short and long durations of stress along the plate boundaries. These behaviors are responsible for the creation of earthquakes and volcanic eruptions. Examples include earthquakes in the western US and volcanic eruptions in northwest North America and Alaska. The position will enhance our reputation for excellence in the training of geoscientists for employment in environmental consultancy companies, the energy industry, USGS, and state geological surveys. This departmental strength is important for preparing our graduate students for computational geosciences, including computer modeling of earth deformation along plate boundaries and groundwater aquifers. This position is an essential part of the DGS geophysics research cluster group.

- **Seismic Stratigrapher**

  **Rationale:** Seismic stratigraphy is a branch of stratigraphy that uses interpretation of 2- and 3-D seismic reflection images of subsurface rock units to characterize and reconstruct ancient sedimentary systems. Such sedimentary systems are scientifically important because they record the interfacial conditions between the geomorphic, biologic, atmospheric, and deep-Earth (tectonic) processes. Understanding the origin and distribution of sedimentary rocks is vital to society as these rocks host significant natural resources, including hydrocarbons, potable water, coal, and sedimentary ores. Seismic stratigraphy is crucial for the study of sedimentary systems, and bridges the research interests of geologists, geophysicists, engineers, and other physical scientists. In addition, seismic stratigraphy can be used to determine sea level changes, and can therefore give insight into past climate changes. The timing and extent of catastrophic natural disasters such as volcanic eruptions, meteor impacts, earthquakes, and tsunamis can also be identified using seismic stratigraphic research methods. Expertise in seismic stratigraphy
will increase collaborative research activity in the UA Center for Sedimentary Basin Studies
and in departmental programs in Energy & Resources, Environment & Climate Change, and
Geodynamics & Natural Hazards. This addition is vital for the Department’s growth to
increase its presence in diverse fields of research and education, ranging from global climate
change and geohazards to energy resource exploration, through the development of novel
research initiatives and enhanced student training opportunities with industry and public
agencies.

• **Carbonate Petrologist/Carbonate Geologist**

  **Rationale:** Carbonate rocks constitute about 15-20% of the Earth’s crust and they are
fundamental components of the sedimentary and hydrological cycles. In addition to inorganic
precipitation, carbonate minerals are commonly secreted by the activity of organisms and
interconnecting processes occurring at the geosphere and biosphere. Due to their composition and
high preservation potential, carbonate rocks are major components of the geological record
throughout the Phanerozoic, and constitute major sources and/or sinks of CO₂, hydrocarbons, and
minerals (e.g., calcite and dolomite) with diverse industrial applications.

  The addition of a faculty member in carbonate sedimentology/stratigraphy is essential to
strengthen the department as one of the leading institutions in geosciences at the national level. This
hiring will have a major impact in terms of teaching and research, which is summarized as follows:

  Our majors are currently lacking a solid formation in sedimentary petrology and stratigraphy,
which is the foundation for an adequate knowledge of sedimentological processes, paleontology,
structural geology, geochemistry, and hydrogeology. Hiring a faculty member in this area will
contribute to an overall improvement of the undergraduate education in geosciences that is currently
offered. In addition, this faculty position would add a new dimension to field courses, including our
successful field camp.

  Many of our recent graduates, particular at M.Sc. level, are working in companies focusing on
environmental aspects, energy resources, and hydrocarbon exploration and production. The only
available graduate course with a component in carbonate mineralogy / petrology is Sedimentary
Petrography, but courses focusing on carbonate rock formation, characterization at macro- and
microscale, and related to applied geology are absent. It is anticipated that our future graduates will pursue a career in areas in which an understanding of carbonate rocks is paramount.

The department has very dynamic research groups in basin analysis studies, environmental geology / hydrogeology, and geochemistry / paleoclimatology. This faculty position will impact faculty working on these areas, as for example in continental paleoclimatology and karst hydrogeology, and vertebrate new research collaborations internally, as well as externally with academic researchers in other institutions and petroleum and environmental companies.

- **Radiogenic Isotope Geologists:**

  **Rationale:** Quantitative time calculations are a critical aspect of geological research and radiogenic isotopes provide the most useful technique for age estimation. The technique has continually grown in importance since the 1950s when mass spectrometers able to produce precise isotope ratios were developed. Ages calculated from these ratios remain the most important method of quantitative age determination. Recently developed instruments (e.g., laser ablation inductively-coupled mass spectrometers with multiple collectors – LA-MC ICPMS) can determine ages for very small volumes in situ. This has revolutionized the science and avoids most contamination issues.

  Radiogenic Isotope Geology is a unifying position, bringing together researchers from all graduate programs in the Department to provide new collaborative research and funding opportunities.

- **Climate Scientist - Climate Dynamics**

  **Rationale:** Climate studies couple the fundamental components of the Earth system - atmosphere, hydrosphere, biosphere and lithosphere. Climate variability and change generate signals within these components that provide a record of Earth’s past climate and environment and illuminate Earth’s future climate trajectory. Understanding the dynamics and impacts of climate variability and change has become a through-going theme within most geoscience disciplines, and as the coupled human-climate system becomes increasingly environmentally, socially and politically relevant, generating cross-cutting geoscience disciplines with climate science will be increasingly important.
The new faculty would bring expertise in ocean-land-atmosphere interactions and geophysical fluid dynamics with emphasis on using process-based models and global climate models (GCM) to explore the physical mechanisms of modern, paleo and planetary climate change across various spatial and temporal scales. This faculty would establish a cross-disciplinary research program with existing Geological Sciences faculty in paleoclimatology, geochemistry, sedimentology, stratigraphy, tectonics and hydrogeology. Engineering, geography and the National Oceanographic and Atmospheric Administration (NOAA) National Water Center provide additional on-campus opportunities for cross-disciplinary work.

A climate dynamics hire is a natural and essential route for our department to produce the next-generation of academic and industry leaders and become one of the nations leading geoscience institutions. All leading geoscience institutions have integrated modern climate studies to their geoscience departments and energy and environmental industries devote substantial resources understanding the industry impact on climate. This hire is forward-looking for research within our department and provides students with a modern foundation in geosciences.

- **Glaciologist**

  **Rationale:** Glaciers and ice sheets at high-latitude environments are the world’s primary repository of fresh water, and they play a critical role in global climate variability. The National Science Foundation has recognized the importance of glacial studies by investing significant resources in programs such as the GISP (Greenland Ice Sheet Project), WAIS (West Antarctic Ice Sheet Program) and NICL (National Ice Core Laboratory). Research focuses, which include paleoenvironments from ice cores, glacial geology, ice dynamics, numerical modeling, and remote sensing of ice sheets, have important implications for understanding past and ongoing climate change. The addition of a glaciologist would not only broaden the department’s involvement in climate and polar studies, which are currently topics of great interest in the science community, but would also help bridge the gap between faculty focused on environmental geology/hydrogeology and tectonics/geodynamics.

- **Fluvial Hydrogeologist**

  **Rationale:** The Department has a dynamic group of hydrogeologists and geochemists working to understand and solve water resource and water quality problems through their research initiatives.
The NOAA Water Center will provide exciting opportunities for research partnerships between Center scientists and DGS faculty and students to solve some of the nation’s most challenging water-related problems. The addition of a Fluvial Hydrogeologist to the environmental faculty will enable the department to take full advantage of these opportunities and regain a critical area of water research expertise that has been lacking for more than 15 years. This position will also participate in the Center for Freshwater Studies, bridging and promoting research collaborations with faculty in Biological Sciences and Geography.

- **Economic Geologist**
  
  **Rationale:** The minerals industry is one of the highest paying employers for geologists, second only to the petroleum industry. Coal is the most abundant fossil fuel in the U.S. and China, and coal combustion will continue to supply most of the world’s electricity for the foreseeable future. Our technological society depends on the discovery and development of precious metal and rare earth element ore deposits. Non-metallic ore deposits are even more important than metallic deposits for the construction and maintenance of the nation’s infrastructure. The Department does not have a critical mass of faculty in the “hard rock” area of geology, although many of our undergraduate students elect to pursue undergraduate research projects and ultimately graduate programs in this subdiscipline. Addition of an Economic Geologist to the department will provide new research, teaching and outreach capabilities which will benefit our students, the University and the State of Alabama.

- **Interfacial Geochemist:**
  
  **Rationale:** Interfacial geochemistry is a relatively new area of geoscience that seeks to understand the mechanisms and rates of molecular interactions taking place at the particle-water interface, including microbial processes. Geochemistry is the Department’s greatest strength, with more than half of the current faculty having expertise in this sub-discipline. This position will enhance the curriculum and research capabilities of the Department in the area of geochemistry and would be active in the Center for Freshwater Studies and in the NOAA Water Research Center. In addition, this position will expand opportunities for collaborative research with other DGS geochemists and hydrologists, and create new opportunities for interdisciplinary research with microbiologists in the Department of Biological Sciences and with nanoscientists in Materials Engineering.
• **Oceanographer/Marine Geologist**

**Rationale:** An Oceanographer/Marine Geologist will contribute to the DGS by working with other departmental researchers in environmental geochemistry, paleoclimate, marine geophysics and hydrogeology. This position will be part of multi-disciplinary group working to understand global issues critical to the open ocean system and coastal areas, including organic and inorganic carbon cycling, trace element cycling, nutrient cycling, ocean-atmosphere and/or ocean-land interactions, and biogeochemical processes and modeling. An Oceanographer will stimulate collaborative research opportunities with the Dauphin Island Sea Lab, promote interdisciplinary research with the Department of Biological Sciences and the Alabama Geological Survey, contribute to the Marine Science degree program, and enable the Department to add oceanography courses to the curriculum, including GEO 103: Ocean and Earth System.

• **Add one teaching faculty position by the fall 2014 semester.**

**Rationale:** The Department of Geological Sciences plans to hire a Clinical Lecture Track faculty to teach 4 sections of 100-level geology classes. This position is critical to the training of undergraduate geology majors and to support the Department’s commitment to the introductory geology instruction of the UA undergraduate students.

The Department seeks a scientist with a Ph.D. in geology, geological education and/or related field. The new hire will assume an important role in maintaining current program strengths and spearheading new teaching initiatives. The successful candidate will have experience and interest in teaching introductory geology and be willing to explore novel pedagogical methodology.

The position will help the department continue its successful undergraduate introductory geology teaching programs. This position is needed in order to maintain the Department’s ability to teach many intro geology classes and will be advertised at the assistant professor level.

Many tenured and tenure-track faculty at the DGS teach 100-level Introductory Geology classes. Presently these faculty members are Drs. Samantha Hansen (Seismology), Delores Robinson (structural geology, tectonics), Geoff Tick (Hydrogeology), Alberto Perez-Huerta (Paleontology and Sandstone Petrology), Paul Aharon (Sedimentary and isotope geochemistry), Fred Andrus (paleoclimatology, stable isotope geology), Ryan Ewing (Sedimentology) Rona Donahoe (Inorganic
Geochernistry), and Yuehan Lu (Organic Geochemistry). When hired the Clinical Lecture Track faculty will take over teaching intro geology courses from faculty members who need to commit more time to graduate courses in their specialty.

**Action Plan:** The DGS plans to hire a CLTF in August 2014 This position is critical for maintaining our strength in 100-level undergraduate geology classes. It will also help in the BA, BS and BSG degree programs in Geological Sciences. The person hired for this position will teach 4-sections of 100-level geology courses per semester (GEO 101: The Dynamic Earth; GEO 102: The Earth Through Time; GEO 104: Hazardous Earth; GEO 105: Sustainable Earth). The new CLTF position therefore would allow our tenured or tenure-track faculty to teach more courses in their specialty for upper level undergraduate students and graduate students at the DGS.

The candidate will have experience in teaching 100-level geology courses and expertise in the pedagogy of undergraduate teaching. The Department has attracted students from engineering and other scientific disciplines to its undergraduate program in recent years. We anticipate that offering our 100-level courses by a faculty member who has expertise teaching these courses and enjoys teaching them will help the DGS to increase the enrollment of undergraduate students interested in interdisciplinary research and encourage them eventually to pursue graduate degrees in the geological sciences and/or related fields.

- **Enhance career opportunities and professional development activities for DGS undergraduate majors by making necessary changes in the undergraduate curriculum that will better fit the needs of our students.**

**Action Plan:** The DGS is proposing a new undergraduate curriculum to be implemented by the fall, 2013 semester (please see the Appendix A for the proposed curriculum). A central component of this new curriculum is to expand the role of internships and research experience as parts of a multi-track system to encourage the development of specialized skills while maintaining a broad base in fundamental geology. The DGS strongly encourages all undergraduate students to participate in undergrad research and internships.

- **Enhance career opportunities and professional development activities for M.S. and Ph.D. students by making our graduate curriculum better fit the needs of our graduate students.**
Action Plan: The DGS is proposing a series of changes in our graduate program to be implemented by fall 2013. Please see Appendix B for the new graduate program curriculum proposal. The new curriculum formally organizes the DGS Graduate Courses into three research areas which are representative of current faculty research programs. The courses listed are organized by their primary “home” within this program structure. A number of courses also fit within more than one program. The three research areas are:

- Energy and Mineral Resources Program
- Environmental Geoscience Program
- Tectonics Program

- Continue to increase diversity of DGS faculty, staff, and students.

Action Plan: The DGS has made great strides forward in the last few years. Out of 14 faculty, 5 (36%) are female and 6 (43%) originate from outside of the U.S. Of the 75 undergraduate student majors, 30% are female. Out of 57 graduate students, 18 (32%) are female and 14 (25%) are international. Especially in the realm of our students, the Department will make every effort to recruit students from under-represented minorities. This may take the form of a targeted recruiting effort in high schools throughout the Southeast and by developing partnerships with universities that have a high minority populations, such as the Historically Black Colleges and Universities. The Department will also encourage faculty to seek support from funding agencies to support minority students. The DGS has been very active in the University student recruiting efforts that target underrepresented groups, for example the Bama Grad Expo. The DGS will continue this tradition.

- Recruit and retain outstanding faculty, staff, and students.

Action Plan: The DGS has actively sought to recruit outstanding faculty, staff and students through personal contacts, professional networking, advertisements and interviews at geological conventions and “word of mouth”. For example, many DGS faculty agree to serve on grant panels (NSF, DOE and IEE) to network and spread the word about the activities of the Department, including faculty hires, recruiting of graduate students, etc. The Department has had significant issues with retaining outstanding junior faculty members. Retention of junior faculty is a multifaceted issue as it often involves complex needs. These needs in general can be summarized as geographic preference, family needs, salary, adequate research space, and sufficient start-up
funding. Although the DGS and UA cannot do much about geographic preference and family needs, unless it is a dual-career family issue, improvements in salary, start-up funding and departmental space allocations can certainly help the Department retain outstanding faculty.

Recruiting outstanding graduate students must include providing funding that is competitive nationally with other major geology departments. We have established scholarships that can be used to supplement Graduate Assistant stipends for outstanding Ph.D. ($5,000) and M.S. ($2,500) applicants. The Department also nominates every outstanding applicant to the graduate program for Graduate Council Fellowships and Dean’s Merit Awards. These funds are essential in helping us recruit outstanding graduate students who are receiving multiple graduate assistantship offers from other institutions.

- **Continue to increase faculty research productivity as evidenced by increased extramural research funding.**

**Action Plan:** Improve the evaluation system that rewards grant submission and scholarly activities. The Department will continue to support the efforts of faculty to write successful grant proposals. The DGS encourages its faculty members to attend grant writing seminars and national conferences and to network with federal and state granting agencies. The DGS and UA also encourage faculty to visit program directors of major federal funding agencies such as NSF, DOE, and NASA. In addition, the DGS plans to provide released time from teaching for faculty receiving grants of $>250,000/year.

The DGS will establish a formal mentoring program for the newly hired assistant professors. The department plans to appoint mentors that will be able to guide new hires along the path to tenure. The mentoring program will constitute two mentors; one from the department and one from outside the department.

- **Add one technician position by the fall 2014 semester.**

**Rationale:** Geoscience has been an area of rapid technological advances over the past 20 years. All areas of geoscience, with particular emphasis on hydrogeology, geophysics, structural geology and geochemistry, have become computationally intensive. For example, the exploration and modeling areas of geophysics require high-end computers – commonly clusters or multi-core systems. A single geophysical survey of a few days can yield tens of terabytes of data. As the volume of data has increased, so has the complexity of the software that is used to process these data. For instance,
both Halliburton and Schlumberger have donated software suites to The University of Alabama (in 2010 and 2012, respectively) which have a combined commercial value exceeding $71M.

Maintaining and running this geophysical and structural geology software requires a significant time commitment and intimate knowledge of specialist database software, including Oracle and specialized Linux- and Windows-based hardware. The hardware used to collect geoscientific data has similarly become more complex. The Department of Geological Sciences is also home to a comprehensive suite of field equipment including a Riegel terrestrial laser scanner, ground penetrating radar, seismic reflection and refraction systems, broadband seismometers, total-station survey equipment, CHIRP, boomer, and assorted other geochemical and hydrogeological equipment. Most of this equipment is used extensively in the undergraduate and graduate classroom. In addition, geological field studies are becoming increasingly high-tech with the introduction of specialized ArcGIS computers used for field data acquisition.

The proposed technician position is crucial to efforts to grow the Department’s national and international reputation. It is common nationally that geoscience departments of similar size to ours have a technician as described herein on staff. It is considered that such a position is necessary to remain competitive with peer departments. Maintenance of the equipment described above currently falls to faculty. In many cases this occupies in excess of 25% of their time. This position will serve to provide improved maintenance of departmental facilities and free faculty time for teaching and research.

**Action Plan:** The Department of Geological Sciences has requested permission to hire a geoscience technician who will provide expertise in the use and maintenance of departmental field equipment and research computing facilities. The technician will also be responsible for trouble-shooting problems with lab-based equipment as needed.

The Department seeks an individual with broad expertise in the maintenance of geoscientific field, lab, and computer equipment. The ideal candidate will be comfortable trouble-shooting problems with a range of equipment commonly used in fields such as hydrogeology, geophysics, structural geology and geochemistry. The candidate will also have experience with high-end computer systems including the maintenance of systems running UNIX. Expertise with Oracle databases, or the willingness to learn, is a plus. The individual filling this position would be expected to train faculty and students in the use of geoscientific field and computer equipment. The individual would also be expected to assist in the field when needed.
• Enhance research capabilities and infrastructure; i.e., maintain and update core facilities for state-of-the-art instrumentation.

**Instrumentation**

**Rationale:** A key factor for evaluating the strength of a Geosciences department is the presence of ‘state-of-the-art’ research instrumentation facilities. The DGS has adequate research facilities at this point for its faculty size (see Facilities at [www.geo.ua.edu](http://www.geo.ua.edu)) but major upgrades, as well as acquisitions, will be needed within the next five years. Many instruments are at the end of their serviceable lives, outdated, or in need of upgrading. Unless this action is implemented, the DGS will not be competitive in terms of teaching, recruitment of top graduate students, and increasing research output. Four main venues are identified to acquire funding for this purpose: i) Contributions from industry and foundations investing in geoscience education and research (e.g., petroleum companies); ii) Alumni contributions; iii) NSF EAR Research Instrumentation for the requests that are associated with a research plan; and iv) Matching funds from UA.

**Action Plan:** The need for upgrading and increasing major departmental instrumentation facilities can be summarized as follows:

**Geochemical Facilities:** Geochemical analytical facilities in the DGS center on and heavily rely on three aging instruments: an Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES), an Inductively-Coupled Plasma Mass Spectrometer (ICP-MS), and an X-ray Fluorescence Spectrometer (XRF). These instruments provide major, minor, and trace element data for all types of geological samples. Users include undergraduate and graduate students for class and research projects, faculty members from UA and other institutions for research, and the Alabama Geological Survey for its water-monitoring programs. The three instruments are all over 15 years old and each has reached the end of its serviceable life. As a result, the manufacturer no longer provides service contracts with guaranteed replacement parts, because they are no longer stocked and therefore nearly impossible to obtain. The estimated cost of replacing these three instruments is approximately $400,000. There are at least three main justifications for this investment: 1) the new instruments will serve the University of Alabama for at least 15 years; 2) new instruments will facilitate innovation in teaching and research experiences for our students, while maintaining a high research performance by UA faculty and collaborators from other institutions; and 3) the
Department will regain the leading-edge geochemical facilities required be highly competitive for research grants.

**Radiogenic Isotope Facility:** The DGS has an excellent stable isotope facility (ASIL), but lacks even the most basic instrumentation for radiogenic isotope analyses. The DGS is aiming to hire a faculty member in radiogenic isotope geology, a position which requires the presence of appropriate instrumentation. This action can be supported by UA throughout an MRI proposal application or the direct solicitation to NSF via a research instrumentation proposal (< $750,000).

**Rock sample preparation room:** The DGS has a heavily used rock sample preparation lab that provides service to faculty and graduate students in the areas of geochemistry, paleoclimatology, paleontology, and sedimentology. Most of the instruments are functional, but in frequent need of repairs and upgrades. This action is of high importance to maintain the research output of many groups in the Department.

**Faculty interaction with the UA Central Analytical Facility (CAF):** The CAF (http://caf.ua.edu) houses the University’s main high-resolution microscopy facilities, including three SEMs and a TEM, as well as the electron microprobe (EMP) instrument which is primarily used by the DGS and has been recently upgraded with NSF funding. However, the involvement of DGS faculty in requesting instrument upgrades or in influencing the decision making process for instrument acquisition is minimal. It is anticipated that the EPM may be replaced within the next five years and SEM instrumentation will need upgrades for the purpose of characterization of geological samples. These actions will demand a critical number of DGS faculty to be involved in CAF activities in the near future.

**Common Laboratory Space:**

**Rationale:** Faculty members in the DGS are assigned a laboratory space for their specific research programs after their initial appointment. This is a critical part of recruiting and retaining outstanding faculty. The presence of limited common laboratory areas such as the geochemistry lab seems to be preventing the integration of research programs and maximizing the use of space by faculty with common research needs. The provision of new space for collective use is anticipated to impact the research productivity and emphasizes the importance of future development of the department.
**Action Plan:** In anticipation of new faculty hiring, and the expansion of the Department, the proposed improvement of common space can be summarized as follows:

**Cleanroom:** The DGS is proposing the expansion of research expertise in Geochemistry by the addition of faculty in radiogenic isotope geology and interfacial geochemistry. At least a class 100, or even a class 1000, cleanroom will be needed to accommodate the new research lines in geochemistry, requiring a space with low levels of environmental pollutants.

**Geochemistry Laboratory:** The department houses and maintains major research instrumentation for geochemistry research and faculty are actively involved in research related to isotope, organic and inorganic and bio-geochemistry. Faculty and graduate students would greatly benefit from common lab space with appropriate working benches, fume hoods, and sample storage space.

**Computer Laboratory:** The DGS has an 8-station research computer lab for faculty and graduate student use, which is already too small to meet student demand for some computer-based courses. It is anticipated that with the new addition of faculty and graduate students, the expansion of this common space will be needed.

**Equipment Staging Space:** The DGS will be acquiring additional geophysical/geotechnical instrumentation, as well as upgrading the equipment used for geologic field camp, resulting in the need for new equipment staging space.

- **Increase the available laboratory and office space for the increased number of faculty and students in the Department.**

There is only limited space available for the use of the DGS in Bevill Building. To accommodate the proposed growth within the next 8 years, the DGS will need new laboratory and office space. There may be new available space in Bevill Building as the new science & engineering complex buildings are constructed and occupants of some laboratories and offices moved to the new buildings. The DGS would like to have some of these new spaces assigned to newly hired faculty to accommodate their research and teaching needs.

- **Develop additional interdisciplinary research and educational programs with university and industrial partners.**

The DGS has already established several interdisciplinary research programs with many other departments and centers in the University, including Biological Sciences, Chemical Engineering and the MINT center. The DGS also has a cooperative research and exchange agreement for faculty and
students with Kadir Has University in Turkey. The Department would like to expand these research programs and establish new ones within the University and other universities in the US and abroad. With College support, three DGS faculty members visited the Chinese University of Geosciences–Beijing last year to explore a possible cooperative exchange agreement. Department faculty have also visited Ocean University China. The Department intends to establish close ties with the planned NOAA National Water Center on the UA campus. The Department would also like to develop new consortium agreements and research partnership with the energy and environmental industries.

- **Initiate a new departmental endowment fund raising campaign.**

  **Rationale:** The primary difference between the DGS and “big name” geoscience departments is the lack of sufficient departmental endowments. Although the GSAB has greatly benefitted the department through the development of endowed scholarship funds, many critical non-scholarship needs also exist. The Department seeks to work with the GSAB and with the University and College Advancement teams to conduct an intensive fund-raising initiative to create an endowment with gifts from our alumni and industry. The endowment would provide the Department with the financial flexibility to take advantage of one-time opportunities. For example, two years ago we had a one-time opportunity to upgrade our analytical lab with two state-of-the-art instruments for the price of a single instrument. Although this deal would have paid for itself in less than 3 years from maintenance agreement savings alone, funds did not exist for the initial capital expense. Last year, we lost an outstanding faculty candidate because the funds needed to renovate existing lab space were not available.

  **Action Plan:** The DGS Chair will work together with the A&S Dean and Development officer to initiate a new departmental endowment fund raising campaign. We plan to start this campaign in the fall, 2013 semester.
Appendix A

Department of Geological Sciences Planning Committee
Undergraduate Curriculum Proposal

Existing Introductory Courses

<table>
<thead>
<tr>
<th>GEO 101: The Dynamic Earth title</th>
<th>Proposed Introductory Courses</th>
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</thead>
<tbody>
<tr>
<td>GEO 102: The Earth Through Time</td>
<td>GEO 103: Ocean &amp; Earth System (tentative</td>
</tr>
<tr>
<td>GEO 104: Hazardous Earth</td>
<td>GEO 201: Geologic Foundations</td>
</tr>
<tr>
<td>GEO 105: Sustainable Earth</td>
<td>GEO 202: Dinosaurs</td>
</tr>
</tbody>
</table>

Rationale

We propose retention of fundamental core geology courses, while revising the introductory course curriculum and adding career tracks for our BSG and BS degrees. The BS degree would be increased to 42 hours of required hours in the major, including 13 hours of electives, and the minor eliminated. The career tracks would eliminate the 6 hours of semi-required courses in the current BSG degree, offering students the ability to take a greater number of elective courses focused in one of two different career paths, or in general geology. Our objective is to improve the marketability of our graduates to the two major employers of geologists: the energy industry and the environmental industry.

New Course Descriptions

GEO 103: Ocean & Earth System – This proposed 4 hour Natural Science course would expand our 100-level options, providing Marine Science, Geology, Environmental Science and Biology majors with introductory knowledge of how the ocean affects climate variability, the carbon cycle and the hydrologic cycle, and how Plate Tectonics, the atmosphere and weathering/erosion of rock materials controls the chemical composition of the oceans.

GEO 201: Geologic Foundations – This four hour team-taught studio course would be required for all Geology majors and have a prerequisite of any GEO 10X course. The goal of this course is to provide our majors with intensive overview of five core areas of geology (earth materials, mountain building, geologic time, stratigraphic principles, geologic mapping and map interpretation). We anticipate that the addition of this course to the curriculum will improve our students’ preparation for, and success in, subsequent core geology courses, increase student retention and graduation rates, and help attain undergraduate program learning objectives. The class will be taught as a studio.
GEO 202: The Dinosaurs – This 3 hour course would have GEO 102 as a prerequisite and examine the evolution, adaptation, range, and extinction of the dinosaurs.

GEO 203: Geology of the National Parks – This 3 hour course would have GEO 101 as a prerequisite and examine the geologic features and origins of several US National Parks such as Crater Lake, Glacier National Park, the Grand Canyon, Yellowstone National Park and the Great Smoky Mountains.

Required Core Geology Courses (30 hours total)

GEO 10X (4 hours)
GEO 201: Geologic Foundations (4)
GEO 210: Mineralogy (4)
GEO 314: Petrology (4)
GEO 365: Structural Geology (4*)
GEO 367: Sedimentology and Stratigraphy (4)
GEO 495: Geologic Field Camp (6)

*Denotes increase from 3 to 4 hours.

Degree Tracks – BSG students select 15 hours (BS students select 13 hours) of elective courses within one of three different informal tracks. Students must take at least one quantitative courses (+). They will be highly encouraged to take either GEO 399 or GEO 497 (undergraduate research or internships). We are exploring the possibility of making outreach (e.g. K-12) opportunities available for credit. An overarching goal for this curriculum change is to encourage more senior theses.

<table>
<thead>
<tr>
<th>Track 1 - Energy</th>
<th>Track 2 - Environment</th>
<th>Track 3 - General Geology</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 369 – Geophysics (3)+</td>
<td>GEO 306 – Hydrogeology (3)+</td>
<td>GEO 355 – Paleontology (4*)</td>
</tr>
<tr>
<td>GEO 407 – Seismology (3)+</td>
<td>GEO 401 – Paleoclimatology (3)</td>
<td>GEO 363 – Geomorphology (3)</td>
</tr>
<tr>
<td>GEO 420 – Petroleum Geol. (3)</td>
<td>GEO 470 – Geochemistry (4*W)+</td>
<td>GEO 416 - Volcanology (3W)</td>
</tr>
<tr>
<td>GEO 399 – Undergrad. Res. (3)</td>
<td>GEO 399 – Undergrad. Res. (3)</td>
<td>GEO 490 – Region. Geol. (1-3)</td>
</tr>
<tr>
<td>GEO 497 – Geologic Intern. (3)</td>
<td>GEO 497 – Geologic Intern. (3)</td>
<td>GEO 492 – Geol. Field Writ. (2)</td>
</tr>
</tbody>
</table>

Offered on demand:

GEO 422--Sed Basins Analysis GEO 404 – Quat. Clim. & Env. (3) GEO 304 – Marine Geology (3)
GEO 383 -- Global Tectonics
Appendix B

Department of Geological Sciences Planning Committee
Graduate Curriculum Proposal

In the fall of 2011 the Department of Geological Sciences (DGS) had an enrollment of 60 graduate students. This represents a growth of 100% relative to fall 2005 enrollment. At 4.29 graduate students for each graduate faculty member, the committee does not propose substantive growth in enrollment until we are able to increase the number of faculty. Instead, we propose to focus on refining our current course offerings and program requirements.

Formal Organization of Courses into Three Research Areas

The research areas listed below are representative of current faculty research programs. The courses listed are organized by their primary “home” within this program structure. A number of these courses also fit within more than one program.

Environmental Geoscience Program

GEO 501: Climate Change
GEO 506: Hydrogeology
GEO 510: Soil and Groundwater Restoration
GEO 525: Environmental Isotopes
GEO 525: Environmental Geochemistry
GEO 525: Organic Geochemistry
GEO 525: Soil Science
GEO 562: Quaternary Environments
GEO 570: General Geochemistry
GEO 571: Thermodynamics for Geologists
GEO 576: Analytical Geochemistry
GEO 607: Introduction to Groundwater Modeling
GEO 673: Aqueous Environmental Geochemistry

Tectonics Program

GEO 507 Seismology
GEO 513: Sedimentary Petrology: Clastics
GEO 514: Advanced Igneous Petrology
GEO 515: Metamorphic Petrology
GEO 516: Volcanology
GEO 525: Electron Microprobe Analysis
GEO 534: Tectonics Seminar
GEO 542: Geodynamics
GEO 567: Clastic Depositional Systems
GEO 650: Isotope Geology

Energy and Mineral Resources Program

GEO 522: Sedimentary Basin Analysis
GEO 525: Methods in Hydrocarbon Exploration
GEO 525: Geological Carbon Sequestration
GEO 525: Well log analysis
GEO 525: Imperial Barrel Award
GEO 530: Ore Deposits
GEO 541: Applied Geophysics
GEO 545: Multi-Channel Seismic Processing
GEO 546: Scientific Computing
GEO 561: Sequence and Seismic Stratigraphy
GEO 565: Comparative Structural Geology (T?)
GEO 582: Advanced Stratigraphy

Participation in University Scholars Program

It is proposed that the DGS participate in the University Scholars Program. Designed for gifted and highly motivated undergraduates with a GPA of greater than 3.3, this program allows seniors to enroll in graduate classes and simultaneously complete the requirements for both Master’s and Bachelor’s degrees.

Reordering of Preliminary Exam/Proposal Defense

Critical thinking skills and the ability to think on one’s feet are essential skills for the success of a student in a Ph.D. program. To help students develop this skill set, a research skills exam will be introduced for students in their second or third semester. This exam will have a similar format to our current preliminary exam (now held in the fifth semester).

Proposal 1: A research skills exam, very similar in format to our current preliminary exam, will be required of all new students in their second semester. For example, all new Ph.D. students entering in the fall would take this exam in the following April. If a student fails this exam it can be retaken once (in the following September). This will allow us to quickly determine the suitability of a student for our Ph.D. program and/or identify gaps in the student’s knowledge that can be remedied by taking specific classes. The timing of the dissertation proposal will remain unchanged.

Proposal 2: The requirements for the current preliminary exam will be satisfied by the submission of a paper for publication to the advisory committee in the student’s fifth semester.

We are also proposing the following additions to the requirements for M.S. and Ph.D. students:
M.S students may submit one paper for publication in an earth science journal and defend it to graduate. However, they will also have an option to write regular thesis and defend it to graduate. M.S students also must make one presentation during a National/International meeting.

Ph.D. students must submit 3 papers for publication in earth science journals to graduate (At least one or two must be accepted for publication?). They also must make three presentations at National/International meetings.

Professional Master’s Program
The DGS has for a number of years had the goal of proposing a Professional Master’s program. After some thought it has been determined that we will not pursue this for several reasons:

1) Major employers of geoscience Masters degree graduates prefer students who have demonstrated the ability to conduct research and write a thesis. In addition, the key demographic (i.e., a large group of working B.S. professionals) required for such a program to be successful is not present in Tuscaloosa;

2) The Department has the highest level of per-faculty funding in the College (University?). Funded research projects would be jeopardized should students switch from a thesis based Master’s to the Professional Master’s program;

3) To increase its reputation as a research department, DGS faculty must increase the number and quality of scientific publications. Research productivity would be harmed should many of the students who would have traditionally participated in the thesis based program instead opt for the Professional Master’s program; and

4) The Department has no problem in recruiting high quality students to the graduate program, with graduate program enrollment currently at a historic high. The Department may reconsider this decision if graduate program enrollment drops substantially in the future.

Recruiting Efforts
In an effort to recruit the best graduate students we will organize a yearly recruiting event where students are brought to Tuscaloosa for the weekend to have an opportunity to sample our department and the town. Though details are still being worked out, it is anticipated that the department could commit approximately $6000 to this event annually.
<table>
<thead>
<tr>
<th>Ranking</th>
<th>University</th>
<th>Faculty</th>
<th>GS/Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>California Institute of Technology Pasadena, CA</td>
<td>41</td>
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<tr>
<td>#1</td>
<td>Massachusetts Institute of Technology Cambridge, MA</td>
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<tr>
<td>#3</td>
<td>University of California Berkeley, CA</td>
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<tr>
<td>#4</td>
<td>Stanford University Stanford, CA</td>
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**AVERAGES**  
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References:

StateUniversity.com http://www.stateuniversity.com/program/40-0601/Geology-Earth-Science

Data listed excludes 100% administrators, adjunct faculty, scientists and research faculty.
Entities without data

- Geology B.A.
- Geology B.S. Geo.

University of Alabama

Detailed Assessment Report
2011-2012 Geological Sciences, Department of
(Includes those Action Plans with Budget Amounts marked One-Time, Recurring, No Request.)

Other Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

OthOtcm 1: Recognized Quality
The program will improve and sustain a high level of recognized quality.

Relevant Associations:

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.4 Research within its educational mission
3.3.1.5 Community/public service within its educational mission

General Education/Core Curriculum Associations
9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

Strategic Plan Associations
University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.

Related Measures

M 1: Program Review Strengths
A list of the strengths of the program from the most recent program review will be reported.

Source of Evidence: Academic indirect indicator of learning - other

Target:
No Target Established

Finding (2011-2012) - Target: Not Reported This Cycle
An excellent faculty with very collegial interactions. All faculty members are productive in teaching, research, and service. A unique position as the only geology program in the State of Alabama. Good quality graduate students Faculty members have good name recognition among their peers in the
geology discipline. Several have significant international reputations. These reputations are a major factor in the programs ability to recruit quality graduate students. Good opportunities for interdisciplinary research, and some of the are being pursued (e.g. with Freshwater Ecology). The Departments Ph.D. production, number of publications, and total contract and grant funding are comparable with geology programs that have more faculty. Good experimental facilities and research space, although some long deferred maintenance is badly needed. A health fraction of the graduate students in the program are supported by research assistantships, and the stipends paid by the assistantships are nationally competitive. The department recently formed a leadership board that should serve as a valuable resource for strategic planning and for developmental activities. Small undergraduate enrollment provided low student-faculty ratio and the opportunity for students to receive substantial individual attention. Large freshman service courses provide a ripe opportunity for recruiting undesignated students to major in geology. Program staff is highly qualified and appears to be adequate (with one possible exception).

M 2: Program Review Opportunities
A list of the opportunities for improvement from the most recent program review will be reported.

Source of Evidence: Academic indirect indicator of learning - other

Target: No Target Established

Finding (2011-2012) - Target: Not Reported This Cycle
The undergraduate enrollment could double without increasing the departmental teach load substantially or detracting from program quality (i.e. while maintaining course sizes of less than 20 students per section). It is disturbing that none of the undergraduate students availed themselves of the opportunity to meet with either the review committee or the external reviewer. Furthermore, less than 10% of the undergraduate student responded to the OIR student satisfaction survey (rendering the results of the survey useless). These facts may be indicative of an apathy among the students - that they do no consider themselves active participants in departmental activities. Although course sizes are relatively small, the program is unable to offer the number of course deem end required to permit a full range of courses (at both the graduate and undergraduate level) to cover all of the degrees offered. The Geological Survey can provide a valuable resource for the department. The large turnover that the faculty has experienced in the past five years is indicative of a (perhaps systematic) problem regarding faculty retention, and requires further exploration. Faculty is below critical size in sub-disciplines - thereby limiting opportunities for synergism. Several faculty and graduate students feel the need for more support with UNIX computational systems. Stipends provided by teaching assistantships are too low to be competitive. Several faculty members expressed the desire for college-level assistance in proposal preparation. The department operating budget is minimal The new leadership board is an excellent concept, and it needs to be used to the maximum extent possible for strategic guidance, student placement, and development.

M 3: Program Review Actions
A list of actions in response to the recommendations in the most recent program
review will be reported.

Source of Evidence: Academic indirect indicator of learning - other

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Reported This Cycle**
Review actions not copied from last review. The actions were extensive and covered many pages. A digital copy was not available. The next review is taking place this year, so this will be corrected in the very near future.

**OthOtm 2: Program Enrollments and Degree Completion**
The program will build and sustain an optimal level of annual program enrollments and degree completion

**Relevant Associations:**

**Standard Associations**

**SACS 3.3.1**
3.3.1.1 Educational programs, to include student learning outcomes

**General Education/Core Curriculum Associations**
9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.5 Effectively use course offerings and class size to support priorities.

**Related Measures**

**M 4: Exceeding ACHE viability standards**
The department will exceed the ACHE viability standards.

Source of Evidence: Academic indirect indicator of learning - other

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Ph.D. Program The ACHE viability standard is 2.2 degrees each year averaged over a five year period. For the period 2006-2010 the DGS Ph.D. production averaged 2.6/year. For the period 2007-2011 the DGS Ph.D. production averaged 2.8/year. The DGS Ph.D. program is clearly viable and showing an increase in average Ph.D. production. M.S. Program The ACHE viability standard is 3.75 degrees each year averaged over a five year period. For the period 2006-2010 the DGS M.S. production averaged 6.2/year. For the period 2007-2011 the DGS Ph.D. production averaged 5.8/year. The DGS M.S. program is clearly viable. B.S.G. Program The ACHE viability standard is 7.5 degrees each year averaged over a five year period. For the period 2006-2010 the DGS B.S.G. production averaged 7.6/year. For the period 2007-2011 the DGS Ph.D. production averaged 8.8/year. The DGS B.S.G. program is clearly viable and is showing growth in excess of 15%.

**M 5: Increase in Number of M.S. Degrees Awarded**
The department will show growth in the number of M.S. degrees awarded.

Source of Evidence: Academic indirect indicator of learning - other

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Between 2006 and 2011 the DGS has graduate 37 M.S. students (averaging 6.17/year). The 2011 total was 6 students. So far in 2012 we will have graduated 6 M.S. students (including confirmed graduations for Aug. 2012). Since 2007 we have graduated on average 3 M.S. students during December graduation. We hence fully anticipate that our 2012 total will show significant growth.

**OthOtcm 3: Program Perception**
The program will be highly valued by its program graduates and other key constituencies it serves.

**Relevant Associations:**

- **Standard Associations**
  - **SACS 3.3.1**
    - 3.3.1.1 Educational programs, to include student learning outcomes

- **General Education/Core Curriculum Associations**
  - 9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

- **Strategic Plan Associations**
  - University of Alabama
    - 1.1 Promote and enhance areas of academic, scholarship, and research excellence.
    - 1.2 Increase the recognition of the University’s service priorities that enhance the quality of life for all Alabamians.

**Related Measures**

**M 1: Program Review Strengths**
A list of the strengths of the program from the most recent program review will be reported.

Source of Evidence: Academic indirect indicator of learning - other

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Reported This Cycle**
An excellent faculty with very collegial interactions. All faculty members are productive in teaching, research, and service. A unique position as the only geology program in the State of Alabama. Good quality graduate students Faculty members have good name recognition among their peers in the geology discipline. Several have significant international reputations. These reputations are a major factor in the the programs ability to recruit quality graduate students. Good opportunities for interdisciplinary research, and some of the are being pursued (e.g. with Freshwater Ecology). The Departments Ph.D. production, number of publications, and total contract and grant funding are comparable with geology programs that have more faculty. Good
experimental facilities and research space, although some long deferred maintenance is badly needed. A health fraction of the graduate students in the program are supported by research assistantships, and the stipends paid by the assistantships are nationally competitive. The department recently formed a leadership board that should serve as a valuable resource for strategic planning and for developmental activities. Small undergraduate enrollment provided low student-faculty ratio and the opportunity for students to receive substantial individual attention. Large freshman service courses provide a ripe opportunity for recruiting undesignated students to major in geology. Program staff is highly qualified and appears to be adequate (with one possible exception).

**OthOtcm 4: Demonstration of Excellence in Teaching**
Faculty will demonstrate excellence in teaching at all levels.

**Relevant Associations:**

- **Standard Associations**
  - SACS 3.3.1
    - 3.3.1.1 Educational programs, to include student learning outcomes

- **General Education/Core Curriculum Associations**
  - 9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

- **Strategic Plan Associations**
  - University of Alabama
    - 1.1 Promote and enhance areas of academic, scholarship, and research excellence.

**Related Measures**

**M 6: 50% of SOI Above College Average**
50% of instructor scores from student opinion ratings will meet or exceed the college average.

Source of Evidence: Evaluations

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
The mean lower division instructor score for Geological Sciences was 3.85 for the fall 2011 semester. The A&S lower division instructor score was 3.85. The mean upper division score for Geological Sciences was 4.10. The mean A&S upper division instructor score was 3.85. The mean graduate level score for Geological Sciences was 4.47. The mean A&S division graduate instructor score was 4.0. Lower division classes: 3 of 8 (37.5%) instructors received instructor scores above the college average Upper division classes: 3 of 6 (50%) instructors received instructor scores above the college average Graduate classes: 6 of 8 (75%) instructors received instructor scores above the college average

**Related Action Plans (by Established cycle, then alpha):**

- Obtain summary of SOIs for department

  *Established in Cycle: 2011-2012*
The change in the system of polling students for faculty assessment was not anticipated. Though promised a summary of department...

For full information, see the Details of Action Plans section of this report.

**M 7: Infusion of New Technologies**
Course syllabi will show that 80% of faculty have made an effort to infuse new technologies and pedagogies into their classroom.

Source of Evidence: Document Analysis

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Reported This Cycle**
The current OIRA form for completing syllabi does not allow for automatic inclusion of a statement related to technology. Hence, most are not addressing this issue.

**Related Action Plans (by Established cycle, then alpha):**

**Find more efficient way of examining all departmental syllabi**

*Established in Cycle: 2011-2012*
Due to an appropriate category not existing in the web application offered by OIRA for syllabus creation, new technologies are r...

For full information, see the Details of Action Plans section of this report.

**OthOtm 5: Engagement In Research**
Faculty will engage in research and scholarly activity.

**Relevant Associations:**

**Standard Associations**

*SACS 3.3.1*

3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.4 Research within its educational mission

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

*University of Alabama*

1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.2 Increase the recognition of the University’s service priorities that enhance the quality of life for all Alabamians.
2.4 Increase the number of graduate research and teaching assistants and provide them with competitive salaries and benefits.
3.4 Increase involvement of undergraduate students in research and scholarly activities.
4.1 Provide leadership in addressing economic, social, and cultural issues in Alabama through research and outreach activities.
4.2 Promote collaboration with business, non-profit, and governmental agencies to advance the economic, social, and cultural condition of Alabama.
Related Measures

M 8: Number of Refereed Publications
The DGS annual report will show that 75% of faculty will be an author on at least two refereed publications each year.

Source of Evidence: Existing data

Target:
No Target Established

Finding (2011-2012) - Target: Not Reported This Cycle
The annual does not break out individual faculty productivity. The report shows that DGS faculty each produced an average of 2.42 refereed publications in the last year. This is a high level of productivity.

Related Action Plans (by Established cycle, then alpha):

Refereed publications
Established in Cycle: 2011-2012
Due to the format of the departmental annual report this goal will be changed to one that examines the average faculty production...

For full information, see the Details of Action Plans section of this report.

M 9: Number of Grant Proposals
The DGS annual report will show that 80% of faculty submitted one grant proposal during the last academic year.

Source of Evidence: Existing data

Target:
No Target Established

Finding (2011-2012) - Target: Met
The annual report does not reflect individual grant productivity. The report instead shows that the DGS faculty submitted 16 grant proposals in the last year (averaging 1.1 proposals/faculty member). We interpret these results to show that we exceeded the goal of 80% of faculty submitting at least one grant proposal.

Related Action Plans (by Established cycle, then alpha):

Grant proposals
Established in Cycle: 2011-2012
Given the format of the annual report this measure will be redesigned to reflect the average per faculty proposal production. Da...

Obtain measure of grant proposals from OSP
Established in Cycle: 2011-2012
In future years it will be easier to extract the data for faculty publications from the FAR. The data for the grant proposal measure...

For full information, see the Details of Action Plans section of this report.

OthOtcm 6: Participation in Leadership
Faculty will participate and provide leadership in the geoscience profession at local, national, and international levels.

Relevant Associations:
Standard Associations

SACS 3.3.1
3.3.1.5 Community/public service within its educational mission

General Education/Core Curriculum Associations
9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

Strategic Plan Associations

University of Alabama
1.2 Increase the recognition of the University’s service priorities that enhance the quality of life for all Alabamians.
4.1 Provide leadership in addressing economic, social, and cultural issues in Alabama through research and outreach activities.
4.2 Promote collaboration with business, non-profit, and governmental agencies to advance the economic, social, and cultural condition of Alabama.
4.4 Produce graduates who will serve as effective leaders in Alabama’s government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

Related Measures

M 10: Journal and Proposal Reviewing
Faculty Activity Reports will show that 50% of faculty will serve as reviewers for journals and funding agencies.

Source of Evidence: Existing data

Target:
No Target Established

Finding (2011-2012) - Target: Not Reported This Cycle
It has proven difficult to gain timely access to the faculty activity reports. In future years it will be requested that the chair include information on this measure (reviews of journals/proposals) so that it can be included in the assessment report.

Related Action Plans (by Established cycle, then alpha):

Journal and proposal reviewing
Established in Cycle: 2011-2012
The chair will be encouraged to include statistics on journal and proposal reviewing in the annual report. This will overcome di...

For full information, see the Details of Action Plans section of this report.

M 11: Leadership in Professional Societies and Funding Agencies
Faculty Activity Reports will show that 35% of the faculty will be active in the leadership of professional societies and involved in funding agency review panels.

Source of Evidence: Existing data

Target:
No Target Established

Finding (2011-2012) - Target: Met
Access to the faculty activity report has proven problematic. Data from the
annual report show that at least 5 (33%) of the faculty were active in the leadership of professional societies and funding agencies in the last year. Though this falls short of the goal of 35%, this result is based only on examples given in the report. We anticipate that the actual result exceeds 35%. This interpretation is support by the statistic that on average each faculty member served in a leadership capacity for 2 professional societies and funding agencies. In future years the chair will be encouraged to include comprehensive details regarding this statistic in the annual report.

**Related Action Plans (by Established cycle, then alpha):**

**Leadership**
*Established in Cycle: 2011-2012*

The chair will be encouraged to provide more comprehensive details regarding this measure in next years annual report.

**Mentor junior faculty in geoscience leadership**
*Established in Cycle: 2011-2012*

A greater effort will be made to mentor junior faculty and encourage participation in geoscience leadership.

For full information, see the *Details of Action Plans* section of this report.

**OthOtcm 7: Quality Programs For Non-Majors**

The Department of Geological Sciences will offer quality education programs for non-majors.

**Relevant Associations:**

**Standard Associations**

*SACS 3.3.1*

3.3.1.1 Educational programs, to include student learning outcomes

3.3.1.3 Educational support services

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.

1.5 Effectively use course offerings and class size to support priorities.

**Related Measures**

**M 14: Increase in 100-level Student Credit Hours**

The DGS annual report will show that the department has increased the number of credit hours produced in 100-level classes.

Source of Evidence: Existing data

**Target:**

No Target Established

**Finding (2011-2012) - Target: Met**

The DGS annual report show that student credit hour production has increased
from 2970 in the 2008 fall semester to 4814 in the fall 2011 semester. M.S. student credit hour production for the same period has increased from 166 to 214. Ph.D. student credit hour production has remained relatively flat (110 in 2008 to 101 in 2011). Overall the department has shown tremendous growth in this area.

**Related Action Plans (by Established cycle, then alpha):**

**Explore reason for decrease in SCH production; increase course diversity**
*Established in Cycle: 2011-2012*
The Department of Geological Sciences will further explore the reason for the decrease in student credit hour production and exp...

For full information, see the *Details of Action Plans* section of this report.

**M 15: Increase in Diversity of 100-Level Classes**
The Department of Geological Sciences will increase the diversity of topics covered in 100-level classes in order to better serve non-majors.

**Source of Evidence:** Document Analysis

**Target:**
No Target Established

**Finding (2011-2012) - Target: Partially Met**
Following the successful introduction of a new introductory class (GEO 104) last year, the department did not introduce a new class.

**Related Action Plans (by Established cycle, then alpha):**

**Strategic plan**
*Established in Cycle: 2011-2012*
At an August retreat the DGS faculty will be discussing a new strategic plan. Initial drafts of this plan include the introducti...

For full information, see the *Details of Action Plans* section of this report.

**OthOtcm 8: Assistance in Economic Development**
The Department of Geological Sciences will assist in the sound and economic development of the region, state, and nation.

**Relevant Associations:**

**Standard Associations**

**SACS 3.3.1**
3.3.1.5 Community/public service within its educational mission

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
1.2 Increase the recognition of the University’s service priorities that enhance the quality of life for all Alabamians.
4.1 Provide leadership in addressing economic, social, and cultural issues in Alabama through research and outreach activities.
4.2 Promote collaboration with business, non-profit, and governmental agencies to advance the economic, social, and cultural condition of Alabama.
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama’s government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.
4.6 Promote leadership development among Alabama’s community leaders, businesses, educational systems, healthcare systems, government agencies, arts organizations, and other vital areas of the state.
4.7 Support our alumni in serving as leaders in their professions and communities.
4.8 Emphasize the creation of leaders as a core component of an education at Alabama’s flagship university.

**Related Measures**

**M 12: Consultation to Industry of Governmental Organizations**
The DGS Annual Report will show that 50% of the departmental faculty have provided consultation to industry or governmental organizations.

Source of Evidence: Existing data

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Reported This Cycle**
The DGS annual report did not break out information with regard to this measure. This will be remedied in future years.

**M 13: DGS Faculty Involvement in Sustainable Development**
The DGS annual report will show that the majority of the faculty are working on projects that directly enhance sustainable development.

Source of Evidence: Existing data

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Reported This Cycle**
It has proven difficult to assess this measure given the available data. A new measure will be designed.

**Related Action Plans (by Established cycle, then alpha):**

**Sustainable development**
*Established in Cycle: 2011-2012*
Promoting sustainable development is an important goal for the DGS. We will discuss ways in which this can be efficiently assess...

For full information, see the *Details of Action Plans* section of this report.

**OthOtcn 9: Preparation for Careers in Geosciences and Graduate School**
The Department of Geological Sciences expects its students to be well prepared for
employment in fields related to geological sciences or graduate school in geological sciences

Related Measures

**M 16: Employment and Acceptance to Graduate School of B.S.G Graduates**

50% or more of Bachelor of Science in Geological Sciences (B.S.G) majors will be gainfully employed or accepted to graduate/professional school within 1 year of graduation. The will be determined by a phone and email survey undertaken by DGS personnel.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**

No Target Established

**Finding (2011-2012) - Target: Met**

Students graduating in the August 2011, December 2011, and May 2012 semesters were polled. Of the respondents, 100% are now employed in the geosciences.

**M 17: Employment and Acceptance to Graduate School of B.S. Graduates**

50% or more of Bachelor of Science (B.S.) majors will be gainfully employed or accepted to graduate/professional school within 1 year of graduation. The will be determined by a phone and email survey undertaken by DGS personnel.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**

No Target Established

**Finding (2011-2012) - Target: Not Reported This Cycle**

No B.S. students responded to our survey.

**M 18: Employment and Acceptance to Ph.D. Programs of M.S. Graduates**

On completion of their degree, M.S. students will continue to a Ph.D. program of gainful employment in the geological sciences within one year. This will be determined by a phone and email survey undertaken annually by DGS personnel.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**

No Target Established

**Finding (2011-2012) - Target: Met**

Of the 12 graduate students that have graduated in the period August 2010 - May 2011, 10 (83%) are actively engaged in the geoscience. Ph.D. graduates - one is an adjunct faculty member, one is a postdoc, one is a technician in a university laboratory, and one is working in the oil industry. M.S. graduates - one is working as a geoscientist for a state organization, 2 are in the oil industry, 2 have gone on to a Ph.D. program, and one is an instructor at a university. The two remaining M.S. graduates are gainfully employed outside of the geoscience.

Details of Action Plans for This Cycle (by Established cycle, then alpha)

**Explore reason for decrease in SCH production; increase course diversity**

The Department of Geological Sciences will further explore the reason for the decrease
in student credit hour production and explore ways to further increase introductory course diversity.

**Established in Cycle:** 2011-2012  
**Implementation Status:** In-Progress  
**Priority:** High

**Relationships (Measure | Outcomes):**  
**Measure:** Increase in 100-level Student Credit Hours  
**Outcomes:** Quality Programs For Non-Majors

**Find more efficient way of examining all departmental syllabi**  
Due to an appropriate category not existing in the web application offered by OIRA for syllabus creation, new technologies are rarely mentioned, despite being widely adopted in the department. We are are thus exploring other ways to assess this category.

**Established in Cycle:** 2011-2012  
**Implementation Status:** In-Progress  
**Priority:** High

**Relationships (Measure | Outcomes):**  
**Measure:** Infusion of New Technologies  
**Outcomes:** Demonstration of Excellence in Teaching

**Grant proposals**  
Given the format of the annual report this measure will be redesigned to reflect the average per faculty proposal production. Data from the last ten years will be examined and an appropriate benchmark will be determined that is both realistic and will promote growth.

**Established in Cycle:** 2011-2012  
**Implementation Status:** Planned  
**Priority:** High

**Relationships (Measure | Outcomes):**  
**Measure:** Number of Grant Proposals  
**Outcomes:** Engagement In Research

**Journal and proposal reviewing**  
The chair will be encouraged to include statistics on journal and proposal reviewing in the annual report. This will overcome difficulties with personnel beyond the chair having access to the faculty activity report.

**Established in Cycle:** 2011-2012  
**Implementation Status:** Planned  
**Priority:** High

**Relationships (Measure | Outcomes):**  
**Measure:** Journal and Proposal Reviewing  
**Outcomes:** Participation in Leadership

**Leadership**  
The chair will be encouraged to provide more comprehensive details regarding this measure in next years annual report.

**Established in Cycle:** 2011-2012  
**Implementation Status:** Planned  
**Priority:** High
Relationships (Measure | Outcomes):
Measure: Leadership in Professional Societies and Funding Agencies | Outcomes: Participation in Leadership

**Mentor junior faculty in geoscience leadership**
A greater effort will be made to mentor junior faculty and encourage participation in geoscience leadership.

*Established in Cycle:* 2011-2012  
*Implementation Status:* In-Progress  
*Priority:* High

Relationships (Measure | Outcomes):
Measure: Leadership in Professional Societies and Funding Agencies | Outcomes: Participation in Leadership

**Obtain measure of grant proposals from OSP**
In future years it will be easier to extract the data for faculty publications from the FAR. The data for the grant proposal measure do not give a true measure of faculty productivity. In future years the data for this measure will be obtained from the Office of Sponsored Programs and reflect average grant proposal submission and funding rates.

*Established in Cycle:* 2011-2012  
*Implementation Status:* In-Progress  
*Priority:* High

Relationships (Measure | Outcomes):
Measure: Number of Grant Proposals | Outcomes: Engagement In Research

**Obtain summary of SOIs for department**
The change in the system of polling students for faculty assessment was not anticipated. Though promised a summary of departmental assessments, this has not yet been received. Previously the assessment information was kept and tabulated by the departmental secretary. For the moment this information is being extracted from the faculty activity reports. A more efficient method of examining all departmental syllabi needs to be initiated.

*Established in Cycle:* 2011-2012  
*Implementation Status:* In-Progress  
*Priority:* High

Relationships (Measure | Outcomes):
Measure: 50% of SOI Above College Average | Outcomes: Demonstration of Excellence in Teaching

**Refereed publications**
Due to the format of the departmental annual report this goal will be changed to one that examines the average faculty production of refereed journal articles. Data form the last tens years will be examined to determine what a good goal is that is both realistic and will promote growth in productivity.

*Established in Cycle:* 2011-2012  
*Implementation Status:* Planned  
*Priority:* High

Relationships (Measure | Outcomes):
Measure: Number of Refereed Publications | Outcomes: Engagement In
Research

**Strategic plan**
At an August retreat the DGS faculty will be discussing a new strategic plan. Initial drafts of this plan include the introduction of at least two new lower level classes that will greatly enhance our course diversity.

*Established in Cycle:* 2011-2012  
*Implementation Status:* In-Progress  
*Priority:* High

**Relationships (Measure | Outcomes):**
- **Measure:** Increase in Diversity of 100-Level Classes  
- **Outcomes:** Quality Programs For Non-Majors

**Sustainable development**
Promoting sustainable development is an important goal for the DGS. We will discuss ways in which this can be efficiently assessed.

*Established in Cycle:* 2011-2012  
*Implementation Status:* Planned  
*Priority:* High

**Relationships (Measure | Outcomes):**
- **Measure:** DGS Faculty Involvement in Sustainable Development  
- **Outcomes:** Assistance in Economic Development

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**Detailed Assessment Report**

**2011-2012 Geology B.S.**
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

### Mission / Purpose

The Department of Geological Sciences is committed to providing strong educational and research programs that benefit students, the science, society, and the state of Alabama. Our mission is to:  
- Maintain quality educational programs that provide basic geologic instruction to nonmajors.  
- Maintain quality undergraduate programs that prepare students for graduate education or careers in the geological sciences.  
- Maintain a quality graduate program that provides M.S. and Ph.D. students with the skills necessary to carry out independent research and obtain employment in a specialized area of the geological sciences.  
- Develop and maintain research programs that contribute new knowledge to the geological sciences.  
- Provide service to the scientific community and the public.

### Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

**SLO 1: Describe past and present earth processes**
Students will be able to identify & describe past and present processes that formed the earth.

**Connected Document**

[BS Geology Curriculum Maps](#)
Relevant Associations:

Standard Associations

SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

General Education/Core Curriculum Associations

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

Strategic Plan Associations

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.

Related Measures

M 1: GEO 495– the geology capstone class
Field course (GEO 495– the geology capstone class) grades with ≥50% of students achieving a grade of B or above

Source of Evidence: Academic direct measure of learning - other

Target: ≥50% of students will achieve a grade of B or above.

Finding (2011-2012) - Target: Met
Grades for the 2012 summer field school ranged from A to D-. 7/8 earned B or above = 87.5%.

M 2: Field-based projects
Successful observation and interpretation of geological relationships during field-based projects in Field Course [GEO 495]. This will be assessed from the rubric-generated grade given for the geological history sections of the 4-5 week long projects in GEO 495.

Source of Evidence: Project, either individual or group

Target: ≥ 75% of students will successfully describe past and present earth processes as measured by rubrics evaluating two projects in GEO 495 Field Course. Successful is defined as a score of 2 or better in the corresponding rubric categories.

Finding (2011-2012) - Target: Met
8 students were enrolled in GEO 495. The results for each project are: Nacimeinto Project Report: 5 of 8 earned scores of 2 or better Ranchos Project Report: 8 of 8 earned scores of 2 or better. Overall success rate = 81%

SLO 2: Create a investigative strategy
Students will be able to create a strategy to investigate a geological question.

Connected Document
BS Geology Curriculum Maps

Relevant Associations:

Standard Associations

SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.

**Related Measures**

**M 3: Research projects in GEO 399**
Successful (grade of C or higher) completion of research projects in GEO 399 Independent Study in Geology.

Source of Evidence: Project, either individual or group

**Target:**
≥75% of students will earn a C or better in GEO 399.

**Finding (2011-2012) - Target: Met**
16 students enrolled in GEO 399 this assessment period and all (100%) earned grades of B or above.

**M 4: Field/problem solving strategy for field-based projects in Field Course [GEO 495]**
Successful design of field/problem solving strategy for field-based projects in Field Course [GEO 495]. This is assessed from the rubric-generated grade given for methods sections of the 4-5 week long projects in GEO 495.

Source of Evidence: Project, either individual or group

**Target:**
≥75% of students will earn a satisfactory or higher score (≥2) in the Methods section of the rubrics used to grade two assignments in GEO 495.

**Finding (2011-2012) - Target: Met**
8 of 8 students (100%) enrolled in GEO 495 earned 2 or higher in the associated rubric category for both the Nacimiento and Ranchos exercises.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

**Expand ways to assess this skill set.**
*Established in Cycle: 2011-2012*
Additional measures will be sought to better assess this goal.

**SLO 3: Evaluate scientific literature quality**
Students will be able to evaluate the quality of scientific literature.

**Connected Document**
BS Geology Curriculum Maps

**Relevant Associations:**

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes

General Education/Core Curriculum Associations

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data
11 Writing - SLO is related to building on students' competency in academic writing skills and aims to extend those skills

Strategic Plan Associations

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.

Related Measures

M 5: Writing assignments (W classes) and/or research projects in 200 to 400-level geological science classes
Successful completion (grade of C or higher) of writing assignments (W classes) and/or research projects in 200 to 400-level geological science classes by ≥50% program majors

Source of Evidence: Written assignment(s), usually scored by a rubric

Target:
≥50% program majors will successfully complete (grade of C or higher) writing assignments in GEO 416 (Volcanology).

Finding (2011-2012) - Target: Met
16 of 18 students in Geo 416 were declared geology majors (13 BS or BSG). All (100%) of these students passed the writing components of the class.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Classes not always offered
Established in Cycle: 2011-2012
Due to a shortage of faculty and sabbatical leave alternative classes will be assessed.

M 6: Written and oral discussions conducted in GEO 416
Ability to critique and discuss scientific literature by program majors as shown in written and oral discussions conducted in GEO 416

Source of Evidence: Written assignment(s), usually scored by a rubric

Target:
≥50% of students will adequately reference literature based on rubric assessments in GEO 401 and GEO 416.

Finding (2011-2012) - Target: Met
27 of 34 students earned C- or better on research-based writing assignments and 34 or 34 students had adequate literature referencing based on rubric assessment. The grading methods in Geo 416 class changed due to a faculty member leaving the department and direct measurement was not possible for this outcome in isolation. However, since 100% of the student passed the writing elements of the class, and literature discussion was a key component of
the overall project, these data suggest most students achieved the goal.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Addition of more oral assignments**
*Established in Cycle: 2011-2012*
Faculty will be encouraged to add more oral assignments to better instruct and assess communication skills.

**SLO 4: Express their scientific analyses**
Students will be able to express their scientific analyses and findings in both written and oral format.

**Connected Document**
BS Geology Curriculum Maps

**Relevant Associations:**

**Standard Associations**

**SACS 3.3.1**
3.3.1.1 Educational programs, to include student learning outcomes

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data
11 Writing - SLO is related to building on students' competency in academic writing skills and aims to extend those skills

**Strategic Plan Associations**

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.

**Related Measures**

**M 7: Presentations and projects in 200-level GEO classes**
Successful completion (grade of C or higher) of presentations and projects in 200-level GEO classes

Source of Evidence: Presentation, either individual or group

**Target:**
Successful completion (grade of C or higher) of presentations and projects in 200-level GEO classes.

**Finding (2011-2012) - Target: Not Reported This Cycle**
Incomplete data are available at this time. Class size necessitated a change in teaching methods.

**M 8: Presentations and projects in 300-level GEO classes**
Successful completion (rubric-generated grade of C or higher) of presentations and projects in 300-level GEO classes

Source of Evidence: Presentation, either individual or group

**Target:**
≥75% successful completion (rubric-generated grade of C or higher) of
presentations and projects in 314 Igneous and Metamorphic Petrology, 365 Structural Geology, and 369 Geophysics.

**Finding (2011-2012) - Target: Met**

11/13 students in Geo 314 successfully completed projects (one additional student dropped due to medical reasons). 8/9 students successfully completed projects in Geo 367. 8/12 students successfully completed projects in Geo 369. Overall 79% of students met the goal.

**M 9: Presentations and projects in 400-level GEO classes**

Successful completion (rubric-generated grade of C or higher) of presentations and projects in 400-level GEO classes

Source of Evidence: Presentation, either individual or group

**Target:**

\[ \geq 75\% \text{ successful completion (rubric-generated grade of C or higher) of presentations and projects in GEO 416.} \]

**Finding (2011-2012) - Target: Not Reported This Cycle**

No data available due to change in faculty who teaches the class.

**SLO 5: Visualize and interpret geological structures**

Students will be able to visualize and interpret geological structures in three-dimensions

**Connected Document**

[BS Geology Curriculum Maps](#)

**Relevant Associations:**

**Standard Associations**

**SACS 3.3.1**

3.3.1.1 Educational programs, to include student learning outcomes

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.

**Related Measures**

**M 10: Geological maps and cross sections**

Successful construction of geological maps and cross sections during 4-5 field-based projects in Field Course [GEO 495]. This will be assessed from the rubric-generated grade given for cross sections and maps

Source of Evidence: Project, either individual or group

**Target:**

\[ \geq 50\% \text{ of students will successfully construct geological maps and cross sections during 4-5 field-based projects in Field Course [GEO 495]. This will be assessed from the rubric-generated grade given for the Nacimiento and Rancheros exercises with successful defined as a score of 2 or better.} \]

**Finding (2011-2012) - Target: Met**
8 of 8 students earned 2 or higher in the rubrics for both the Nacimeinto and Rancheros projects.

**M 11: Subsurface imaging exercises**
Successful completion of subsurface imaging exercises for seismic, gravity, and magnetic exercises in GEO 369

Source of Evidence: Academic direct measure of learning - other

**Target:**
≥50% of students will successfully complete (C- or better) exercises focused on seismic, gravity, and magnetic subsurface imaging in GEO 369.

**Finding (2011-2012) - Target: Met**
Two exercises require students to develop a 3 dimensional understanding of structures based on geophysical data. 8 out of 12 student successfully completed subsurface imaging exercises (successfully = C- or above)

**Other Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans**

**Oth Otcm 6: Recognized quality**
The program will improve and sustain a high level of recognized quality

**Connected Document**
BS Geology Curriculum Maps

**Related Measures**

**M 12: Geological Sciences program review**
A list of the strengths related to the BSG degree from the most recent Geological Sciences program review will be reported

Source of Evidence: Academic indirect indicator of learning - other

**M 13: Opportunities for improvement**
A list of the opportunities for improvement related to the BSG degree from the most recent Geological Sciences program review will be reported.

Source of Evidence: Academic indirect indicator of learning - other

**M 14: Response to the recommendations**
A list of actions in response to the recommendations related to the BSG degree from the Geological Sciences program review will be reported.

Source of Evidence: Academic indirect indicator of learning - other

**Oth Otcm 7: Optimal enrollment and completion levels**
The program will build and sustain an optimal level of annual program enrollments and degree completions.

**Connected Document**
BS Geology Curriculum Maps

**Related Measures**

**M 15: Undergraduate majors**
The number of undergraduate majors during Fall semester will be reported
M 16: Completions in Geology
Degree completions in Geology per year will be reported and compared to ACHE standards.
Source of Evidence: Academic indirect indicator of learning - other

M 17: Student credit hour production
Student credit hour production in Geological Science classes will be reported
Source of Evidence: Academic indirect indicator of learning - other

OthOtcm 8: Program Value
The program will be highly valued by its program graduates and other key constituencies it serves

Related Measures

M 18: Employment data
The employment data of Geology graduates will be reported
Source of Evidence: Academic indirect indicator of learning - other

M 19: Graduate school placement
The graduate school placement of Geology graduates will be reported
Source of Evidence: Academic indirect indicator of learning - other

M 20: Survey data
Survey data from Geology graduates will be reported
Source of Evidence: Academic indirect indicator of learning - other

OthOtcm 9: Department Outcome: Demonstrate excellence
Faculty will demonstrate excellence in teaching at all levels. Department Outcome #1 Improvement Action(s) to be advanced (copied from 2010-11 report). The change in the system of polling students for faculty assessment was not anticipated. Though promised a summary of departmental assessments, this has not yet been received. Previously the assessment information was kept and tabulated by the departmental secretary. For the moment this information is being extracted from the faculty activity reports. A more efficient method of examining all departmental syllabi needs to be initiated. Prior to the electronic submittal of syllabi by individual faculty, the departmental secretary kept all syllabi on file. This is not now the case. The secretary is still trying to find out how she can best carry obtain all the syllabi. Faculty will be encouraged to report the use of new technologies and pedagogies in their syllabi

Related Measures

M 21: Instructor scores from student opinion
50% of instructor scores from student opinion ratings administered in class will meet or exceed the college average
Source of Evidence: Academic indirect indicator of learning - other

**M 22: Infuse new technologies and pedagogies**
Course syllabi will show that 80% of faculty have made an effort to infuse new technologies and pedagogies into their classroom
Source of Evidence: Academic indirect indicator of learning - other

**OthOtcm 10: Department Outcome: Engage in research**
Faculty will engage in research and scholarly activity Department Outcome #2 Improvement Action(s) to be advanced (copied from 2010-11 report). In future years it will be easier to extract the data for measure 3.1 from the FAR. The data for measure 3.2 do not give a true measure of faculty productivity. In future years the data for this measure will be obtained from the Office of Sponsored Programs and reflect average grant proposal submission and funding rates.

**Connected Document**
BS Geology Curriculum Maps

**Related Measures**

**M 23: The Faculty Activity Report**
The Faculty Activity Report will show that 75% of tenured faculty will be an author on at least two refereed publications each year.
Source of Evidence: Academic indirect indicator of learning - other

**M 24: Data from the Office of Sponsored Programs**
Data from the Office of Sponsored Programs will show that 80% of faculty will submit at least one grant proposal over the course of 12 months
Source of Evidence: Academic indirect indicator of learning - other

**OthOtcm 11: Department outcome: Provide leadership**
Faculty will participate and provide leadership in the geoscience profession at local, national, and international levels Department Outcome #3 Improvement Action(s) to be advanced (copied from 2010-11 report). A greater effort will be made to mentor junior faculty and encourage participation in geoscience leadership.

**Connected Document**
BS Geology Curriculum Maps

**Related Measures**

**M 25: Faculty will serve as reviewers for journals**
Faculty Activity Reports will show that 50% of faculty will serve as reviewers for journals and funding agencies.
Source of Evidence: Academic indirect indicator of learning - other

**M 26: Faculty will be active in the leadership**
Faculty Activity Reports will show that 35% of the faculty will be active in the leadership of professional societies and involved in funding agency review panels
Source of Evidence: Academic indirect indicator of learning - other

**OthOtcm 12: Department outcome: Offer quality education programs for non-majors**
The department of Geological Sciences will offer quality education programs for non-
majors. Department Outcome #n Improvement Action(s) to be advanced (copied from 2010-11 report). The Department of Geological Sciences will further explore the reason for the decrease in student credit hour production and explore ways to further increase introductory course diversity.

**Connected Document**

[BS Geology Curriculum Maps](#)

**Related Measures**

**M 27: Increased the number credit hours**
Annual reports will show that the department has increased the number credit hours produced in 100-level classes

Source of Evidence: Academic indirect indicator of learning - other

**M 28: Increase the diversity of topics**
The department will increase the diversity of topics covered in 100-level classes in order to better serve non-majors

Source of Evidence: Academic indirect indicator of learning - other

**Details of Action Plans for This Cycle (by Established cycle, then alpha)**

**Addition of more oral assignments**
Faculty will be encouraged to add more oral assignments to better instruct and assess communication skills.

**Established in Cycle:** 2011-2012  
**Implementation Status:** Planned  
**Priority:** Low

**Relationships (Measure | Outcomes):**
- **Measure:** Written and oral discussions conducted in GEO 416  
  **Outcomes:** Evaluate scientific literature quality

**Classes not always offered**
Due to a shortage of faculty and sabbatical leave alternative classes will be assessed.

**Established in Cycle:** 2011-2012  
**Implementation Status:** Planned  
**Priority:** Medium

**Relationships (Measure | Outcomes):**
- **Measure:** Writing assignments (W classes) and/or research projects in 200 to 400-level geological science classes  
  **Outcomes:** Evaluate scientific literature quality

**Implementation Description:** The assessment coordinator will seek data from GEO 470 (General Geochemistry)

**Expand ways to assess this skill set.**
Additional measures will be sought to better assess this goal.

**Established in Cycle:** 2011-2012  
**Implementation Status:** Planned  
**Priority:** Medium

**Relationships (Measure | Outcomes):**
Mission / Purpose

The Department of Geological Sciences (DGS) is committed to providing strong educational and research programs that benefit students, the science, society, and the state of Alabama. Our mission is to: Maintain quality educational programs that provide basic geologic instruction to nonmajors. Maintain quality undergraduate programs that prepare students for graduate education or careers in the geological sciences. Maintain a quality graduate program that provides M.S. and Ph.D. students with the skills necessary to carry out independent research and obtain employment in a specialized area of the geological sciences. Develop and maintain research programs that contribute new knowledge to the geological sciences. Provide service to the scientific community and the public. Assist in the sound and sustainable economic development of the region, state, and nation.

Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Independent Scientific Research
Students will demonstrate the knowledge and skills to conduct independent scientific research

Connected Document
MS Geology Curriculum Maps

Relevant Associations:

Standard Associations

SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.4 Research within its educational mission

General Education/Core Curriculum Associations

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data
11 Writing - SLO is related to building on students' competency in academic writing skills and aims to extend those skills

Strategic Plan Associations

University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama's
government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

**Related Measures**

**M 1: Writing of a Thesis Proposal**
40% of M.S. students will successfully write a thesis proposal with the approval of all committee members by the end of their second semester in residence.

Source of Evidence: Writing exam to assure certain proficiency level

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 35 M.S. students enrolled in the DGS M.S. program who were in their second or later semester at the end of the 2011/12 (May 2012) academic year 6 (17%) defended their thesis proposal by the end of their second semester. The result falls well below the goal of 40%. This is currently the topic of much discussion in our department. The current approach has been to put greater emphasis on the lack of scholarship and continued assistantship eligibility if goals are not met. The important of meeting these goals will be emphasized to new students during the August orientation.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Enforcement of timeline**
*Established in Cycle: 2011-2012*
The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making grea...

**M 2: Presentation of Thesis Proposal**
40% of M.S. students will successfully present their thesis proposal with the approval of all committee members by the end of their second semester in residence.

Source of Evidence: Presentation, either individual or group

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 35 M.S. students enrolled in the DGS M.S. program who were in their second or later semester at the end of the 2011/12 (May 2012) academic year 6 (17%) had defended their thesis proposal by the end of their second semester. This falls well below our goal of 40%. Please see measure 1 for a discussion on this topic.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Enforcement of timeline**
*Established in Cycle: 2011-2012*
Efforts are being made to change departmental record keeping. Currently the date that a proposal is submitted is not distinguish...

**SLO 2: Presentation Skills**
Students will be able to present their results to groups of their peers and the public.
Relevant Associations:

**Standard Associations**

**SACS 3.3.1**

3.3.1.1 Educational programs, to include student learning outcomes

3.3.1.4 Research within its educational mission

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.

4.3 Produce scholars who will become academic and civic leaders in their disciplines.

4.4 Produce graduates who will serve as effective leaders in Alabama's government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

Related Measures

**M 3: Students will have presented their research results**

By the end of their program, 90% of students will have presented their research results at a national or international conference.

Source of Evidence: Presentation, either individual or group

**Target:**

No Target Established

**Finding (2011-2012) - Target: Not Met**

Of the 7 M.S. students who graduated in the last year (Aug. 2011, Dec. 2012, and May 2012) 5 (72%) gave at least one presentation at a conference outside of The University of Alabama. It is disappointing that we have not reached our goal of 90% given the availability of funding to support student travel and the importance to our department of our students being visible at regional, national, and international meetings.

**Related Action Plans (by Established cycle, then alpha):**

For full information, see the Details of Action Plans section of this report.

**External presentations**

Established in Cycle: 2011-2012

At the new student orientation in August increased emphasis will be made on the importance of presenting at conferences. It will...

**M 4: Departmental Presentations (GEO-534/5)**

By the end of their degree program all students will have completed two departmental presentations (GEO-534)

Source of Evidence: Presentation, either individual or group
**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the ten students who graduated in the last year (Aug. 2011, Dec. 2011, and May 2012) all gave at least two departmental presentations. This goal was met.

**SLO 3: Written and Oral Presentation of Final Results**
Students will be able present and defend their final research results in both a written and oral form to groups of their peers, departmental faculty, and experts within their discipline.

**Connected Document**
MS Geology Curriculum Maps

**Relevant Associations:**

**Standard Associations**
SACS 3.3.1  
3.3.1.1 Educational programs, to include student learning outcomes  
3.3.1.4 Research within its educational mission

**General Education/Core Curriculum Associations**
9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data  
11 Writing - SLO is related to building on students' competency in academic writing skills and aims to extend those skills

**Strategic Plan Associations**
University of Alabama  
1.1 Promote and enhance areas of academic, scholarship, and research excellence.  
4.3 Produce scholars who will become academic and civic leaders in their disciplines.  
4.4 Produce graduates who will serve as effective leaders in Alabama’s government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

**Related Measures**

**M 5: Defense of Final Results**
50% of students will defend their results successfully to an interdisciplinary departmental audience by the end of their fourth semester in residence.

Source of Evidence: Senior thesis or culminating major project

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 21 M.S. students in their fourth semester or later during 2011/12 academic year (May 2012), 2 (10%) gave their final thesis defense presentation. This result falls well below our goal of 50%. This is a topic of discussion amongst our faculty and we must make a greater effort to graduate our students in a timely fashion. On issue for some students is the availability of well paying ($20k+) summer internships for geoscience graduate students. This takes our students away from the department for up to 3 months and delays research progress.
M 6: Journal Article Submission
Within 6 months of their final defense, 20% of M.S. students will have submitted a paper to a refereed journal.

Source of Evidence: Senior thesis or culminating major project

Target:
No Target Established

Finding (2011-2012) - Target: Not Met
Of the 7 M.S. students who graduated in the last year (May. 2010, Aug. 2011, and Dec. 2011, one (17%) submitted a paper for publication to a refereed journal within 6 months of graduation. This falls short of our goal of 20%. It is important that we can increase this percentage for the benefit of student, faculty, and departmental publication production. Once we can get this consistently above 20%, we aim to increase the goal percentage.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Published papers
Established in Cycle: 2011-2012
During the August orientation students will be made aware of the importance to their future goals and the reputation of their re...

SLO 4: Participation In Research Specific Extracurricular Activities
Students will take part in extracurricular activities that will prepare them for a Ph.D. program or employment in a specialized area of geological sciences.

Connected Document
MS Geology Curriculum Maps

Relevant Associations:

Standard Associations
SACS 3.3.1
3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.4 Research within its educational mission

General Education/Core Curriculum Associations
9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

Strategic Plan Associations
University of Alabama
1.1 Promote and enhance areas of academic, scholarship, and research excellence.
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama’s government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

Related Measures

M 7: Internship Participation
During the course of their program, 20% of M.S. students will participate in a co-op,
internship program, or participate in a research experience at a lab facility outside of The University of Alabama.

Source of Evidence: Field work, internship, or teaching evaluation

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the 10 M.S. students who graduated in August 2011, December 2011, and May 2012 5 (50%) participated in an internship or a research experience in a lab external to the University of Alabama. Though this exceeds our goal, the side effect is that this means that students are often away for the summer and hence do not complete their program in the required 4 semesters.

**M 8: External Funding Applications**
During the course of their program, 30% of M.S. students will apply for external funding to support their research.

Source of Evidence: Academic direct measure of learning - other

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the 7 M.S. students who graduated in the last year (August 2011, December 2011, and May 2012), 5 (71%) applied for external funding during the degree program. This far exceeds the stated goal of 30%.

**Details of Action Plans for This Cycle (by Established cycle, then alpha)**

**Enforcement of timeline**

Efforts are being made to change departmental record keeping. Currently the date that a proposal is submitted is not distinguished from the date that it is presented. The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding.

**Established in Cycle:** 2011-2012
**Implementation Status:** In-Progress
**Priority:** High

**Relationships (Measure | Outcomes):**
**Measure:** Presentation of Thesis Proposal | **Outcomes:** Independent Scientific Research

**Enforcement of timeline**

The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding.

**Established in Cycle:** 2011-2012
**Implementation Status:** In-Progress
**Priority:** High
External presentations
At the new student orientation in August increased emphasis will be made on the importance of presenting at conferences. It will be emphasized to the students that funding is available to support this.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcomes):

Published papers
During the August orientation students will be made aware of the importance to their future goals and the reputation of their research group of publishing their research results.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcomes):
Measure: Students will have presented their research results | Outcomes: Presentation Skills

Mission / Purpose
I. Department Mission Statement: The Department of Geological Sciences is committed to providing strong educational and research programs that benefit students, the science, society, and the state of Alabama. Our mission is to: • Maintain quality educational programs that provide basic geologic instruction to nonmajors. • Maintain quality undergraduate programs that prepare students for graduate education or careers in the geological sciences. • Maintain a quality graduate program that provides M.S. and Ph.D. students with the skills necessary to carry out independent research and obtain employment in a specialized area of the geological sciences. • Develop and maintain research programs that contribute new knowledge to the geological sciences. • Provide service to the scientific community and the public. Assist in the sound and sustainable economic development

Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Independent Scientific Research
Students will demonstrate the knowledge and skills to conduct independent scientific research

**Connected Document**

[PhD Geology Curriculum Maps](#)

**Relevant Associations:**

**Standard Associations**

**SACS 3.3.1**

3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.4 Research within its educational mission

**General Education/Core Curriculum Associations**

9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data
11 Writing - SLO is related to building on students' competency in academic writing skills and aims to extend those skills

**Strategic Plan Associations**

*University of Alabama*

1.1 Promote and enhance areas of academic, scholarship, and research excellence.
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama's government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

**Related Measures**

**M 1: Writing of a Dissertation Proposal**

40% of Ph.D. students will successfully write a dissertation proposal with the approval of all committee members by the end of their third semester in residence.

Source of Evidence: Writing exam to assure certain proficiency level

**Target:**

No Target Established

**Finding** *(2011-2012) - Target: Met*

Of the 12 Ph.D. students in their 3rd semester or later at the end of the 2011/12 semester (May 2012), 1 (8%) defended their dissertation proposal by the end of their 3rd semester. This result is well below the goal of 40%. The department is actively discussing this issue and is enforcing methods that we hope will encourage students to complete this goal on time (including loosing eligibility for scholarships and assistantships).

**Related Action Plans (by Established cycle, then alpha):**

For full information, see the *Details of Action Plans* section of this report.

**Enforcement of timeline**

*Established in Cycle: 2011-2012*

The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making grea...
40% of Ph.D. students will successfully complete their dissertation with the approval of all committee members by the end of their third semester in residence.

Source of Evidence: Presentation, either individual or group

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the 12 Ph.D. students in their 3rd semester or later at the end of the 2011/12 semester (May 2012), 1 (8%) defended their dissertation proposal by the end of their 3rd semester. This result is well below our goal of 40%. Please see measure 1 (and related goal) for a discussion.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Enforcement of timeline**
*Established in Cycle: 2011-2012*
Currently DGS record keeping does not distinguish proposal submission from defense. This is being worked on. The DGS is putting ...

**SLO 2: Presentation Skills**
Students will be able to present their results to groups of their peers and the public.

**Connected Document**
PhD Geology Curriculum Maps

**Relevant Associations:**

**Standard Associations**

**SACS 3.3.1**
3.3.1.1 Educational programs, to include student learning outcomes
3.3.1.4 Research within its educational mission

**General Education/Core Curriculum Associations**
9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama’s government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

**Related Measures**

**M 3: Students will have presented their research results**
By the end of their degree program 90% of students will successfully complete two external presentations.

Source of Evidence: Presentation, either individual or group

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 3 Ph.D. students who graduated during this period, 2 (66%) gave at least two presentations external to The University of Alabama during their degree program. This falls short of our goal of 90%. It is essential for the health of our program that our Ph.D. students are presenting at external meetings. New student orientations will emphasize the need to present. It must be made clear to Ph.D. students that if they aim to go into academia or to a government research lab, a lack of exposure will greatly hinder this. If this is not their goal, they should consider their reasons for being in a Ph.D. program.

**M 4: Departmental Presentations (GEO-634/5)**
By the end of their degree program all students will have completed two departmental presentations (GEO-634/5)

Source of Evidence: Presentation, either individual or group

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
All (100%, 3 out of 3) students who completed their Ph.D. degrees in Aug. 2011, Dec. 2011, and May 2012 semesters successfully completed four presentations to the department. This goal has been met.

**SLO 3: Critical Thinking Skills**
Students will display excellent critical thinking skills through an examination of a broad knowledge of the geological sciences and an ability to solve problems under pressure

**Connected Document**
PhD Geology Curriculum Maps

**Relevant Associations:**

**Standard Associations**

**SACS 3.3.1**
- 3.3.1.1 Educational programs, to include student learning outcomes
- 3.3.1.4 Research within its educational mission

**General Education/Core Curriculum Associations**
- 9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data

**Strategic Plan Associations**

University of Alabama
- 1.1 Promote and enhance areas of academic, scholarship, and research excellence.

**Related Measures**

**M 5: Completion of Oral Preliminary Examination**
50% of Ph.D. students will complete an oral comprehensive exam by the end of their fifth semester with the approval of all student committee members.

Source of Evidence: Comprehensive/end-of-program subject matter exam

**Target:***
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 10 Ph.D. students who were in their 5th semester or later at the end of the 2011/12 academic year (May 2012), 1 (10%) successfully passed their preliminary exam before the end of the 5th semester. This result falls well short of our goal of 50%. The department is discussion the possibility of moving an exam similar to the preliminary exam to a point earlier in the program so that students are more fully prepared to meet this goal in a timely fashion. This will be the topic of an upcoming retreat.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**enforcement of timeline**
*Established in Cycle: 2011-2012*
A greater emphasis is being placed on the timeline for Ph.D. students. This includes enforcement of the departmental timeline th...

**M 6: Solving A Geological Problem from First Principles**
When presented with an unfamiliar geological problem, 50% of students will be able to solve the problem from first principles.

Source of Evidence: Comprehensive/end-of-program subject matter exam

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Reported This Cycle**
This finding is not reported this cycle.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Development of rubrics**
*Established in Cycle: 2011-2012*
A rubric is being developed that can be completed by faculty taking part in preliminary exams. The goal of the rubric will be on...

**SLO 4: Written and Oral Presentation of Final Results**
Students will be able present and defend their final research results in both a written and oral form to groups of their peers, departmental faculty, and experts within their discipline.

**Connected Document**
PhD Geology Curriculum Maps

**Relevant Associations:**

**Standard Associations**

*SACS 3.3.1*
- 3.3.1.1 Educational programs, to include student learning outcomes
- 3.3.1.4 Research within its educational mission

**General Education/Core Curriculum Associations**
- 9 Natural Science - SLO is related to a hands-on laboratory or field experience that emphasizes the scientific method and analysis of data
- 11 Writing - SLO is related to building on students' competency in academic
writing skills and aims to extend those skills

**Strategic Plan Associations**

University of Alabama

1.1 Promote and enhance areas of academic, scholarship, and research excellence.
4.3 Produce scholars who will become academic and civic leaders in their disciplines.
4.4 Produce graduates who will serve as effective leaders in Alabama's government, businesses, educational systems, health care, the arts, and other professions, and who will be leaders in their communities.

**Related Measures**

**M 7: Defense of Final Results**
50% of students will defend their results successfully to a highly interdisciplinary departmental audience by the end of their eighth semester in residence.

Source of Evidence: Senior thesis or culminating major project

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 3 Ph.D. students who graduated in the last year (Aug. 2011, Dec. 2011, and May 2012), none (0%) graduated in eight semesters. This percentage of 0% falls short of our goal of 50%. The department must explore the reality of this goal.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

**Enforcement of timeline**
*Established in Cycle: 2011-2012*
A greater emphasis is being placed on keeping to the departmental timeline for Ph.D. completion at all stages. This included enf...

**M 8: Journal Article Submission**
Within 6 months of their final defense, 50% of students will have submitted three papers to refereed journals.

Source of Evidence: Senior thesis or culminating major project

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the 3 Ph.D. students who graduated during the last year (May 2011, Aug. 2011, Dec. 2011) 1 (33%) had submitted at least three papers within 6 months of their final defense. This falls short of our assessment goal of 50%. The department is attempting to put more emphasis on students completing dissertations that comprise at least three submitted papers. Students are being told the importance of published papers for their future career. Unfortunately, due to the availability of high-paying jobs in the oils industry, where publications are not important, students lack motivation to publish.

**Finding (2011-2012) - Target: Met**
No finding
Details of Action Plans for This Cycle (by Established cycle, then alpha)

**Development of rubrics**
A rubric is being developed that can be completed by faculty taking part in preliminary exams. The goal of the rubric will be only to provide assessment information and to justify committee decisions if required. This rubric will be discussed during an upcoming departmental retreat.

*Established in Cycle*: 2011-2012  
*Implementation Status*: Planned  
*Priority*: High  

**Relationships (Measure | Outcomes):**
- **Measure**: Solving A Geological Problem from First Principles  |  **Outcomes**: Critical Thinking Skills

**enforcement of timeline**
A greater emphasis is being placed on the timeline for Ph.D. students. This includes enforcement of the departmental timeline through the withholding of scholarships and assistantships.

*Established in Cycle*: 2011-2012  
*Implementation Status*: In-Progress  
*Priority*: High  

**Relationships (Measure | Outcomes):**
- **Measure**: Completion of Oral Preliminary Examination  |  **Outcomes**: Critical Thinking Skills

**Enforcement of timeline**
A greater emphasis is being placed on keeping to the departmental timeline for Ph.D. completion at all stages. This included enforcement of rules restricting access to scholarships and assistantships for students who do not keep to the timeline. In light of our failure to meet this goal, the graduate program committee will examine average time to completion for Ph.D. degrees in comparable programs throughout the country.

*Established in Cycle*: 2011-2012  
*Implementation Status*: Planned  
*Priority*: High  

**Relationships (Measure | Outcomes):**
- **Measure**: Defense of Final Results  |  **Outcomes**: Written and Oral Presentation of Final Results

**Enforcement of timeline**
Currently DGS record keeping does not distinguish proposal submission from defense. This is being worked on. The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding.

*Established in Cycle*: 2011-2012  
*Implementation Status*: In-Progress  
*Priority*: High  

**Relationships (Measure | Outcomes):**
- **Measure**: Presentation of Dissertation Proposal  |  **Outcomes**: Independent
Scientific Research

**Enforcement of timeline**
The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding. In addition, the DGS is looking into possibly rearranging the proposal and preliminary exam. This will be a topic of discussion at an upcoming retreat.

**Established in Cycle:** 2011-2012  
**Implementation Status:** In-Progress  
**Priority:** High  

**Relationships (Measure | Outcomes):**
- **Measure:** Writing of a Dissertation Proposal  
- **Outcomes:** Independent Scientific Research
I have completed my first pass through the Annual Academic Department Assessment Reports. I think you have made genuine efforts to monitor achievement of your stated outcomes. In some cases you were not very clear in interpreting your findings and/or drawing conclusions from the findings, but I am not going to render your efforts incomplete. But maybe next year you will need to devote more attention to this expectation in your annual report.

Andy....even though you were not required to provide evidence for the three common program outcomes by July 15, the outcomes need to remain in your assessment plan and report. When you made the request to Julie McAdams to remove them, I had not clearly communicated with Julie that they were not to be removed. It may be necessary to put them back in your MS and PhD entities, but if so, I’ll put them back in for you.

Overall, you have done good work and I hope you will follow through with the action plans (improvements) you’ve identified. I am satisfied that your annual assessment report is complete.

Bob

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Critique of Assessment Activities in the Geological Sciences Department

Bob Smallwood, Ph.D.
Assistant to the Provost for Assessment
October 19, 2012

Overview:

This critique is based on an examination of the current 2012-13 Geological Sciences Department Assessment Plans and the results of the assessment activities that were executed and reported in the 2011-12 Geological Sciences Annual Assessment Report.

The focus of the critique is on identifying strengths of the assessment efforts in monitoring the achievement of student learning outcomes and my suggestions for potential improvements. It is also my intention to identify any areas where the departments’ assessment efforts may fall short of SACS institutional effectiveness expectations.

2012-13 Geological Sciences Department Assessment Plans

It is the University of Alabama’s policy and a SACS expectation that there be an assessment plan for all degree programs offered by the university. There are five degree programs offered in the Department of Geological Sciences at UA, including the following:

1. B.A. Degree
2. B.S. Degree
3. B.S. Geo Degree
4. M.S Degree
5. Ph.D. Degree

In August, 2012, the University of Alabama approved a policy and procedure that permitted departments to “combine” degree programs into a single assessment plan under two conditions:

1. the respective program outcomes and student learning outcomes are essentially the same with only minor exceptions, and
2. the assessment of the achievement of each outcome includes a representative sample of all constituents in the combined degree programs.
In the 2011-12 assessment cycle, in anticipation of a university policy permitting the combination of degree programs into a single assessment plan, the Department of Geological Sciences was given permission to prepare and execute an assessment plan for the BS degree only. At the time that this permission was granted, it was with the understanding that once policy and procedure was developed and approved, the Department of Geological Sciences would take the approved steps to combine the BA degree program, the BS Geo degree program and/or the BA degree program in Geological Sciences into one common assessment plan. If the department continues to want to combine these three undergraduate degree programs into a single assessment plan, the UA policy and procedure needs to be completed as soon as conveniently possible (see attached Policy & Procedure for Combining Degree Programs).

A copy of the abbreviated Detailed Assessment Report (DAR) for the BS degree program, the MS degree program and the PhD degree programs generated from the WEAVEonline Accreditation Management System is attached. These same abbreviated DAR reports have been posted on the OIRA Program Review website. These abbreviated DAR reports contain the department’s mission statement, the programs’ student learning outcomes and the measures used to assess achievement of these outcomes. Findings from the execution of the assessment measures during the 2011-12 cycle are also included in the DARs. Review of these DARs should provide a context for the identified strengths and suggested opportunities for improvements presented below.

Critiques

B.S. Degree Program in Geological Sciences

Strengths

1. The five student learning outcomes address an acceptable array of competencies that give attention to what knowledge and skills the major will achieve upon completion of the BS degree. UA requirements and SACS 3.3.1.1 (student learning outcome) expectations are met by the SLO’s and associated measures that are in place for the 2012-13 assessment cycle.

2. Rubrics (direct assessment measures) are being employed as assessment tools in monitoring the achievement of each SLO.

3. It is commendable that the department faculty have given emphasis to both written and oral communication skills as essential outcomes in their undergraduate expectations.
Opportunities for Improvement

1. I view SLO 1 as the discipline-specific content knowledge outcome, SLO 2, 3 and 5 as methodological outcomes, and SLO 4 as a communication skills outcome. The breadth/depth of SLO 1 seems somewhat narrow. What should be captured by the content-knowledge outcome is what you want students to know upon completing the degree. Expecting students “to identify and describe past and present processes that formed the earth” is certainly an excellent learning outcome but it doesn’t seem to be a very comprehensive expression of geological subject matter. What I usually recommend in these circumstances is for the department faculty to take a look at the “content outline” of commercially prepared subject examinations in the discipline. For example, take a look at the following area concentration test (ACAT) in Geology. See http://www.collegeoutcomes.com/NLI/dsp/dsp_01.aspx

It appears they have subdivided the discipline into nine content areas and offer departments the opportunity to customize a test that focuses on the subareas of the discipline of geology that the department wants to emphasize in their program. I am not necessarily advocating that you adopt the ACAT as an assessment measure, but I think you may want to give consideration to a broader expression of content knowledge, and this ACAT achievement test could help inform that consideration.

2. As we have discussed in recent years, grades in a course are acceptable “indirect” assessment measures reflecting achievement of an outcome but should be backed up by “direct” assessment measures just as you have done in your assessment plan. I sometimes cite the Geological Sciences BS assessment plan as a good example of a department that properly integrates course grades and direct measures of performance (e.g., rubrics) on assignments that are part of the overall assessment of achievement in a course.

I do not want to suggest that rubrics are in any way unacceptable as a measurement tool in your discipline, but I would like to encourage you to consider “broadening” the assessment approaches you employ in monitoring your learning outcomes. More and more departments are adopting an eportfolio approach to complement their other assessment measures. Also, utilizing a “reflective approach” calling on students to think about their own learnings and how what their learning relates to their own life or their career goals is being given more and more attention by departments viewed as having outstanding outcomes assessment programs. You might want to consider “pilot testing” additional assessment approaches to determine if their use improves the quality of the learning inferences you derive from performance outcomes.
M.S. Degree in Geological Sciences

Strengths:

1. I think the “Action Plans” identified in the 2011-12 cycle are solid and serve as excellent examples of improvement initiatives that can be prompted by the systematic examination of student performance in a graduate degree program.

2. The student learning outcomes for this MS degree program concentrates on research methodological skills. This emphasis is consistent with the stated mission of the graduate geological science programs to “provide students with the skills necessary to carry out independent research and obtain employment in a specialized area of the geological sciences.”

Opportunities of Improvement

1. I do not see any indication that the program requires a qualifying exam or comprehensive exam. Having such a culminating comprehensive content mastery examination is not a UA graduate program assessment requirement. In 2010, when the UA Assessment Council prepared guidelines for Graduate-level assessment plans, there was a reluctance to “require” that every graduate program have some sort of content mastery assessment. But there is a SACS comprehensive standard that requires us to show evidence that our graduate programs are more advanced than comparable undergraduate offerings. Those two standards read as follows:

   3.6.1. The institution’s post-baccalaureate professional degree programs, master’s and doctoral degree programs, are progressively more advanced in academic content than its undergraduate programs. (Post-baccalaureate program rigor)

   3.6.2. The institution structures its graduate curricula (1) to include knowledge of the literature of the discipline and (2) to ensure ongoing student engagement in research and/or appropriate professional practice and training experiences. (Graduate curriculum)

I believe there are acceptable alternatives to a comprehensive exam to enable the department to demonstrate compliance with these two standards. For example, you might want to consider adding a content proficiency dimension to the methods (rubrics? rating scales?) you employ in Measure 1 and Measure 2 of your assessment of the student’s thesis proposal.

2. In reporting your findings from the execution of assessment measures during the 2011-12 assessment cycle, you frequently include performance goals when you offer an interpretation of the reported finding. (For example, see reported findings for Measures 3, 4, 5, 6) yet in the WEAVE DAR report, you reported “No Target Established.” I think the performance goals you have identified are in fact performance targets and should be recorded as targets in the WEAVE accreditation management application. This becomes important when you set out to produce customized reports.
from the WEAVEonline accreditation management system where you may want to report the extent to which you are attaining your performance (target) goals.

**Ph.D. Degree in Geological Sciences**

**Strengths:**

1. The breadth of doctoral-level learning outcomes is commendable. Your expectations address content & skill mastery (SLO 1), communication skills (SLO 2 & 4), and higher order critical thinking skills (SLO 3). I think the measures you have selected for each of these expected SLOs are standard and very acceptable. Your efforts are also exceptional in that you have identified performance goals and evaluate your progress by reporting the extent to which these performance goals (targets in WEAVE terms) are attained. (Please consider the same suggestion I offered at the master’s level by reporting these performance goals as targets in your WEAVE Ph.D. entity.)

2. Accrediting bodies, both regional and discipline specific, are not only emphasizing the assessment of program outcomes and student learning outcomes in their criteria, but emphasize using the results of the assessment efforts and assessment results to generate improvements in the teaching learning experience. Your action plans appear to be driven by your assessment efforts and your recognition that adjustments and enhancements need to be made. Your concerns and actions are very consistent with SACS institutional effectiveness expectations.

**Opportunities for Improvement**

1. You have indicated as one of your improvement actions (See the DAR for PhD degree) an interest in developing a rubric that can be completed by faculty taking part in preliminary exams. I am not sure how far along you are in the process of developing the rubric, but I have a couple of resources I would like to recommend that I have frequently recommended to other departments having similar interests. I would recommend you take a look at these two books (I have an extra copy of each I would be glad to give you)
   

   2. Barbara Lovitts and Ellen Wert *Developing Quality Dissertations in the Sciences*
While these two resources are best used to inform the preparation of rubrics to evaluate the quality of dissertations, the dimensions that are incorporated in some of their sample rubrics address what I suspect may be areas addressed in your preliminary exams.

In a seminar I presented last year addressing the assessment and evaluation of dissertations, one of our UA faculty members from the Department of Kinesiology, expressed concerns very similar to those you have expressed in your DAR improvement actions. He emphasized his biggest concern was not on evaluating the dissertation product but evaluating the dissertation process and finding ways to keep his students on track making orderly progress. The timeline issues you have identified in your improvement actions appear to be consistent with comments made by our Kinesiologist colleague. In addressing these timeline challenges, he suggested that what has worked for him is following closely a process advocated in the following book:

*Writing the Winning Thesis or Dissertation: A Step-by-Step Guide* by Allan Glatthorn and Randy Joyner

I have an extra copy of this book that I would also be pleased to give you if you have an interest.
Mission / Purpose

The Department of Geological Sciences is committed to providing strong educational and research programs that benefit students, the science, society, and the state of Alabama. Our mission is to: • Maintain quality educational programs that provide basic geologic instruction to nonmajors. • Maintain quality undergraduate programs that prepare students for graduate education or careers in the geological sciences. • Maintain a quality graduate program that provides M.S. and Ph.D. students with the skills necessary to carry out independent research and obtain employment in a specialized area of the geological sciences. • Develop and maintain research programs that contribute new knowledge to the geological sciences. • Provide service to the scientific community and the public.

Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Describe past and present earth processes
Students will be able to identify & describe past and present processes that formed the earth.

Connected Document
BS Geology Curriculum Maps

Related Measures

M 1: GEO 495— the geology capstone class
Field course (GEO 495— the geology capstone class) grades with ≥50% of students achieving a grade of B or above
Source of Evidence: Academic direct measure of learning - other

Target:
≥50% of students will achieve a grade of B or above.

Finding (2011-2012) - Target: Met
Grades for the 2012 summer field school ranged from A to D- 7/8 earned B or above = 87.5%.

M 2: Field-based projects
Successful observation and interpretation of geological relationships during field-based projects in Field Course [GEO 495]. This will be assessed from the rubric-generated grade given for the geological history sections of the 4-5 week long projects in GEO 495.

Source of Evidence: Project, either individual or group

Target:
≥ 75% of students will successfully describe past and present earth processes as measured by rubrics evaluating two projects in GEO 495 Field Course. Successful is defined as a score of 2 or better in the corresponding rubric categories.

Finding (2011-2012) - Target: Met
8 students were enrolled in GEO 495. The results for each project are: Nacimienta Project Report: 5 of 8 earned scores of 2 or better Ranchos Project Report: 8 of 8 earned scores of 2 or better. Overall success rate = 81%

SLO 2: Create a investigative strategy
Students will be able to create a strategy to investigate a geological question.

Connected Document
BS Geology Curriculum Maps

Related Measures

M 3: Research projects in GEO 399
Successful (grade of C or higher) completion of research projects in GEO 399 Independent Study in Geology.

Source of Evidence: Project, either individual or group

Target:
≥75% of students will earn a C or better in GEO 399.

Finding (2011-2012) - Target: Met
16 students enrolled in GEO 399 this assessment period and all (100%) earned grades of B or above.

M 4: Field/problem solving strategy for field-based projects in Field Course [GEO 495]
Successful design of field/problem solving strategy for field-based projects in Field Course [GEO 495]. This is assessed from the rubric-generated grade given for methods sections of the 4-5 week long projects in GEO 495.

Source of Evidence: Project, either individual or group

Target:
75% of students will earn a satisfactory or higher score (≥2) in the Methods section of the rubrics used to grade two assignments in GEO 495.

**Finding (2011-2012) - Target: Met**
8 of 8 students (100%) enrolled in GEO 495 earned 2 or higher in the associated rubric category for both the Nacimiento and Ranchos exercises.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Expand ways to assess this skill set.**
*Established in Cycle: 2011-2012*
Additional measures will be sought to better assess this goal.

**SLO 3: Evaluate scientific literature quality**
Students will be able to evaluate the quality of scientific literature.

**Connected Document**
- BS Geology Curriculum Maps

**Related Measures**

**M 5: Writing assignments (W classes) and/or research projects in 200 to 400-level geological science classes**
Successful completion (grade of C or higher) of writing assignments (W classes) and/or research projects in 200 to 400-level geological science classes by ≥50% program majors

**Source of Evidence:** Written assignment(s), usually scored by a rubric

**Target:**
≥50% program majors will successfully complete (grade of C or higher) writing assignments in GEO 416 (Volcanology).

**Finding (2011-2012) - Target: Met**
16 of 18 students in Geo 416 were declared geology majors (13 BS or BSG). All (100%) of these students passed the writing components of the class.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Classes not always offered**
*Established in Cycle: 2011-2012*
Due to a shortage of faculty and sabbatical leave alternative classes will be assessed.

**M 6: Written and oral discussions conducted in GEO 416**
Ability to critique and discuss scientific literature by program majors as shown in written and oral discussions conducted in GEO 416

**Source of Evidence:** Written assignment(s), usually scored by a rubric

**Target:**
≥50% of students will adequately reference literature based on rubric assessments in GEO 401 and GEO 416.

**Finding (2011-2012) - Target: Met**
27 of 34 students earned C- or better on research-based writing assignments and 34 or 34 students had adequate literature referencing based on rubric assessment. The grading methods in Geo 416 class changed due to a faculty member leaving the department and direct measurement was not possible for this outcome in isolation. However, since 100% of the student passed the writing elements of the class, and literature discussion was a key component of the overall project, these data suggest most students achieved the goal.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Addition of more oral assignments**
*Established in Cycle: 2011-2012*
Faculty will be encouraged to add more oral assignments to better instruct and assess communication skills.

**SLO 4: Express their scientific analyses**
Students will be able to express their scientific analyses and findings in both written and oral format.

**Connected Document**
- BS Geology Curriculum Maps

**Related Measures**

**M 7: Presentations and projects in 200-level GEO classes**
Successful completion (grade of C or higher) of presentations and projects in 200-level GEO classes

**Source of Evidence:** Presentation, either individual or group

**Target:**
Successful completion (grade of C or higher) of presentations and projects in 200-level GEO classes.

**Finding (2011-2012) - Target: Not Reported This Cycle**
Incomplete data are available at this time. Class size necessitated a change in teaching methods.

**M 8: Presentations and projects in 300-level GEO classes**
Successful completion (rubric-generated grade of C or higher) of presentations and projects in 300-level GEO classes

**Source of Evidence:** Presentation, either individual or group

**Target:**
≥75% successful completion (rubric-generated grade of C or higher) of presentations and projects in GEO 314 Igneous
and Metamorphic Petrology, 365 Structural Geology, and 369 Geophysics.

Finding (2011-2012) - Target: Met
11/13 students in Geo 314 successfully completed projects (one additional student dropped due to medical reasons). 8/9 students successfully completed projects in Geo 367. 8/12 students successfully completed projects in Geo 369. Overall 79% of students met the goal.

M 9: Presentations and projects in 400-level GEO classes
Successful completion (rubric-generated grade of C or higher) of presentations and projects in 400-level GEO classes
Source of Evidence: Presentation, either individual or group

Target:
≥75% successful completion (rubric-generated grade of C or higher) of presentations and projects in GEO 416.

Finding (2011-2012) - Target: Not Reported This Cycle
No data available due to change in faculty who teaches the class.

SLO 5: Visualize and interpret geological structures
Students will be able to visualize and interpret geological structures in three-dimensions

Connected Document
BS Geology Curriculum Maps

Related Measures

M 10: Geological maps and cross sections
Successful construction of geological maps and cross sections during 4-5 field-based projects in Field Course [GEO 495]. This will be assessed from the rubric-generated grade given for cross sections and maps
Source of Evidence: Project, either individual or group

Target:
≥50% of students will successfully construct geological maps and cross sections during 4-5 field-based projects in Field Course [GEO 495]. This will be assessed from the rubric-generated grade given for the Nacimiento and Rancheros exercises with successful defined as a score of 2 or better.

Finding (2011-2012) - Target: Met
8 of 8 students earned 2 or higher in the rubrics for both the Nacimiento and Rancheros projects.

M 11: Subsurface imaging exercises
Successful completion of subsurface imaging exercises for seismic, gravity, and magnetic exercises in GEO 369
Source of Evidence: Academic direct measure of learning - other

Target:
≥50% of students will successfully complete (C- or better) exercises focused on seismic, gravity, and magnetic subsurface imaging in GEO 369.

Finding (2011-2012) - Target: Met
Two exercises require students to develop a 3 dimensional understanding of structures based on geophysical data. 8 out of 12 student successfully completed subsurface imaging exercises (successfully = C- or above)

Details of Action Plans for This Cycle (by Established cycle, then alpha)

Addition of more oral assignments
Faculty will be encouraged to add more oral assignments to better instruct and assess communication skills.

Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: Low

Relationships (Measure | Outcomes):
Measure: Written and oral discussions conducted in GEO 416 | Outcomes: Evaluate scientific literature quality

Classes not always offered
Due to a shortage of faculty and sabbatical leave alternative classes will be assessed.

Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: Medium

Relationships (Measure | Outcomes):
Measure: Writing assignments (W classes) and/or research projects in 200 to 400-level geological science classes | Outcomes: Evaluate scientific literature quality

Implementation Description: The assessment coordinator will seek data from GEO 470 (General Geochemistry)

Expand ways to assess this skill set.
Additional measures will be sought to better assess this goal.

Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: Medium

Relationships (Measure | Outcomes):
Measure: Field/problem solving strategy for field-based projects in Field Course [GEO 495] | Outcomes: Create a investigative strategy
Mission / Purpose

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Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Independent Scientific Research
Students will demonstrate the knowledge and skills to conduct independent scientific research

Connected Document
MS Geology Curriculum Maps

Related Measures

M 1: Writing of a Thesis Proposal
40% of M.S. students will successfully write a thesis proposal with the approval of all committee members by the end of their second semester in residence.
Source of Evidence: Writing exam to assure certain proficiency level

Target:
No Target Established

Finding (2011-2012) - Target: Not Met
Of the 35 M.S. students enrolled in the DGS M.S. program who were in their second or later semester at the end of the 2011/12 (May 2012) academic year 6 (17%) defended their thesis proposal by the end of their second semester. The result falls well below the goal of 40%. This is currently the topic of much discussion in our department. The current approach has been to put greater emphasis on the lack of scholarship and continued assistantship eligibility if goals are not met. The important of meeting these goals will be emphasized to new students during the August orientation.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Enforcement of timeline
Established in Cycle: 2011-2012
The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making gree...

M 2: Presentation of Thesis Proposal
40% of M.S. students will successfully present their thesis proposal with the approval of all committee members by the end of their second semester in residence.

Source of Evidence: Presentation, either individual or group

Target:
No Target Established

Finding (2011-2012) - Target: Not Met
Of the 35 M.S. students enrolled in the DGS M.S. program who were in their second or later semester at the end of the 2011/12 (May 2012) academic year 6 (17%) had defended their thesis proposal by the end of their second semester. This falls well below our goal of 40%. Please see measure 1 for a discussion on this topic.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Enforcement of timeline
Established in Cycle: 2011-2012
Efforts are being made to change departmental record keeping. Currently the date that a proposal is submitted is not distinguish...

SLO 2: Presentation Skills
Students will be able to present their results to groups of their peers and the public.

Connected Document
MS Geology Curriculum Maps

Related Measures

M 3: Students will have presented their research results
By the end of their program, 90% of students will have presented their research results at a national or international conference.
Source of Evidence: Presentation, either individual or group

Target:
No Target Established

Finding (2011-2012) - Target: Not Met
Of the 7 M.S. students who graduated in the last year (Aug. 2011, Dec. 2012, and May 2012) 5 (72%) gave at least one presentation at a conference outside of The University of Alabama. It is disappointing that we have
not reached our goal of 90% given the availability of funding to support student travel and the importance to our department of our students being visible at regional, national, and international meetings.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**External presentations**
*Established in Cycle: 2011-2012*
At the new student orientation in August increased emphasis will be made on the importance of presenting at conferences. It will...

**M 4: Departmental Presentations (GEO-534/5)**
By the end of their degree program all students will have completed two departmental presentations (GEO-534)

Source of Evidence: Presentation, either individual or group

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the ten students who graduated in the last year (Aug. 2011, Dec. 2011, and May 2012) all gave at least two departmental presentations. This goal was met.

**SLO 3: Written and Oral Presentation of Final Results**
Students will be able present and defend their final research results in both a written and oral form to groups of their peers, departmental faculty, and experts within their discipline.

**Connected Document**
[MS Geology Curriculum Maps](#)

**Related Measures**

**M 5: Defense of Final Results**
50% of students will defend their results successfully to an interdisciplinary departmental audience by the end of their fourth semester in residence.

Source of Evidence: Senior thesis or culminating major project

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 21 M.S. students in their fourth semester or later during 2011/12 academic year (May 2012), 2 (10%) gave their final thesis defense presentation. This result falls well below our goal of 50%. This is a topic of discussion amongst our faculty and we must make a greater effort to graduate our students in a timely fashion. On issue for some students is the availability of well paying ($20k+) summer internships for geoscience graduate students. This takes our students away from the department for up to 3 months and delays research progress.

**M 6: Journal Article Submission**
Within 6 months of their final defense, 20% of M.S. students will have submitted a paper to a refereed journal.

Source of Evidence: Senior thesis or culminating major project

**Target:**
No Target Established

**Finding (2011-2012) - Target: Not Met**
Of the 7 M.S. students who graduated in the last year (May. 2010, Aug. 2011, and Dec. 2011, one (17%) submitted a paper for publication to a refereed journal within 6 months of graduation. This falls short of our goal of 20%. It is important that we can increase this percentage for the benefit of student, faculty, and departmental publication production. Once we can get this consistently above 20%, we aim to increase the goal percentage.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Published papers**
*Established in Cycle: 2011-2012*
During the August orientation students will be made aware of the importance to their future goals and the reputation of their re...

**SLO 4: Participation In Research Specific Extracurricular Activities**
Students will take part in extracurricular activities that will prepare them for a Ph.D. program or employment in a specialized area of geological sciences.

**Connected Document**
[MS Geology Curriculum Maps](#)

**Related Measures**

**M 7: Internship Participation**
During the course of their program, 20% of M.S. students will participate in a co-op, internship program, or participate in a research experience at a lab facility outside of The University of Alabama.

Source of Evidence: Field work, internship, or teaching evaluation

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the 10 M.S. students who graduated in August 2011, December 2011, and May 2012 5 (50%) participated in an internship or a research experience in a lab external to the University of Alabama. Though this exceeds our goal, the side effect is that this means that students are often away for the summer and hence do not
complete their program in the required 4 semesters.

**M 8: External Funding Applications**
During the course of their program, 30% of M.S. students will apply for external funding to support their research.

Source of Evidence: Academic direct measure of learning - other

**Target:**
No Target Established

**Finding (2011-2012) - Target: Met**
Of the 7 M.S. students who graduated in the last year (August 2011, December 2011, and May 2012), 5 (71%) applied for external funding during the degree program. This far exceeds the stated goal of 30%.

**Details of Action Plans for This Cycle (by Established cycle, then alpha)**

**Enforcement of timeline**
Efforts are being made to change departmental record keeping. Currently the date that a proposal is submitted is not distinguished from the date that it is presented. The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding.

- **Established in Cycle:** 2011-2012
- **Implementation Status:** In-Progress
- **Priority:** High

**Relationships (Measure | Outcomes):**
- **Measure:** Presentation of Thesis Proposal | **Outcomes:** Independent Scientific Research

**Enforcement of timeline**
The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding.

- **Established in Cycle:** 2011-2012
- **Implementation Status:** In-Progress
- **Priority:** High

**Relationships (Measure | Outcomes):**
- **Measure:** Writing of a Thesis Proposal | **Outcomes:** Independent Scientific Research

**External presentations**
At the new student orientation in August increased emphasis will be made on the importance of presenting at conferences. It will be emphasized to the students that funding is available to support this.

- **Established in Cycle:** 2011-2012
- **Implementation Status:** In-Progress
- **Priority:** High

**Relationships (Measure | Outcomes):**
- **Measure:** Students have presented their research results | **Outcomes:** Presentation Skills

**Published papers**
During the August orientation students will be made aware of the importance to their future goals and the reputation of their research group of publishing their research results.

- **Established in Cycle:** 2011-2012
- **Implementation Status:** In-Progress
- **Priority:** High

**Relationships (Measure | Outcomes):**
- **Measure:** Journal Article Submission | **Outcomes:** Written and Oral Presentation of Final Results

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**Mission / Purpose**

I. Department Mission Statement: The Department of Geological Sciences is committed to providing strong educational and research programs that benefit students, the science, society, and the state of Alabama. Our mission is to: • Maintain quality educational programs that provide basic geologic instruction to nonmajors. • Maintain quality undergraduate programs that prepare students for graduate education or careers in the geological sciences. • Maintain a quality graduate program that provides M.S. and Ph.D. students with the skills necessary to carry out independent research and obtain employment in a specialized area of the geological sciences. • Develop and maintain research programs that contribute new knowledge to the geological sciences. • Provide service to the scientific community and the public. Assist in the sound and sustainable economic development

**Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans**

**SLO 1: Independent Scientific Research**
Students will demonstrate the knowledge and skills to conduct independent scientific research

**Connected Document**
PhD Geology Curriculum Maps

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2012-2013 Program Review Page 95 of 242
Related Measures

M 1: Writing of a Dissertation Proposal
40% of Ph.D. students will successfully write a dissertation proposal with the approval of all committee members by the end of their third semester in residence.

Source of Evidence: Writing exam to assure certain proficiency level

Target:
No Target Established

Finding (2011-2012) - Target: Met
Of the 12 Ph.D. students in their 3rd semester or later at the end of the 2011/12 semester (May 2012), 1 (8%) defended their dissertation proposal by the end of their 3rd semester. This result is well below the goal of 40%. The department is actively discussing this issue and is enforcing methods that we hope will encourage students to complete this goal on time (including loosening eligibility for scholarships and assistantships).

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Enforcement of timeline
Established in Cycle: 2011-2012
The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making gree...

M 2: Presentation of Dissertation Proposal
40% of Ph.D. students will successfully complete their dissertation with the approval of all committee members by the end of their third semester in residence.

Source of Evidence: Presentation, either individual or group

Target:
No Target Established

Finding (2011-2012) - Target: Met
Of the 12 Ph.D. students in their 3rd semester or later at the end of the 2011/12 semester (May 2012), 1 (8%) defended their dissertation proposal by the end of their 3rd semester. This result is well below our goal of 40%. Please see measure 1 (and related goal) for a discussion.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Enforcement of timeline
Established in Cycle: 2011-2012
Currently DGS record keeping does not distinguish proposal submission from defense. This is being worked on. The DGS is putting ...

SLO 2: Presentation Skills
Students will be able to present their results to groups of their peers and the public.

Connected Document
PhD Geology Curriculum Maps

Related Measures

M 3: Students will have presented their research results
By the end of their degree program 90% of students will successfully complete two external presentations.

Source of Evidence: Presentation, either individual or group

Target:
No Target Established

Finding (2011-2012) - Target: Not Met
Of the 3 Ph.D. students who graduated during this period, 2 (66%) gave at least two presentations external to The University of Alabama during their degree program. This falls short of our goal of 90%. It is essential for the health of our program that our Ph.D. students are presenting at external meetings. New student orientations will emphasize the need to present. It must be made clear to Ph.D. students that if they aim to go into academia or to a government research lab, a lack of exposure will greatly hinder this. If this is not their goal, they should consider their reasons for being in a Ph.D. program.

M 4: Departmental Presentations (GEO-634/5)
By the end of their degree program all students will have completed two departmental presentations (GEO-634/5)

Source of Evidence: Presentation, either individual or group

Target:
No Target Established

Finding (2011-2012) - Target: Met
All (100%, 3 out of 3) students who completed their Ph.D. degrees in Aug. 2011, Dec. 2011, and May 2012 semesters successfully completed four presentations to the department. This goal has been met.

SLO 3: Critical Thinking Skills
Students will display excellent critical thinking skills through an examination of a broad knowledge of the geological sciences and an ability to solve problems under pressure

Connected Document
PhD Geology Curriculum Maps

Related Measures

M 5: Completion of Oral Preliminary Examination
50% of Ph.D. students will complete an oral comprehensive exam by the end of their fifth semester with the approval
of all student committee members.

Source of Evidence: Comprehensive/end-of-program subject matter exam

Target: No Target Established

Finding (2011-2012) - Target: Not Met
Of the 10 Ph.D. students who were in their 5th semester or later at the end of the 2011/12 academic year (May 2012), 1 (10%) successfully passed their preliminary exam before the end of the 5th semester. This result falls well short of our goal of 50%. The department is discussion the possibility of moving an exam similar to the preliminary exam to a point earlier in the program so that students are more fully prepared to meet this goal in a timely fashion. This will be the topic of an upcoming retreat.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

enforcement of timeline
Established in Cycle: 2011-2012
A greater emphasis is being placed on the timeline for Ph.D. students. This includes enforcement of the departmental timeline th...

M 6: Solving A Geological Problem from First Principles
When presented with an unfamiliar geological problem, 50% of students will be able to solve the problem from first principles.

Source of Evidence: Comprehensive/end-of-program subject matter exam

Target: No Target Established

Finding (2011-2012) - Target: Not Reported This Cycle
This finding is not reported this cycle.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Development of rubrics
Established in Cycle: 2011-2012
A rubric is being developed that can be completed by faculty taking part in preliminary exams. The goal of the rubric will be on...

SLO 4: Written and Oral Presentation of Final Results
Students will be able present and defend their final research results in both a written and oral form to groups of their peers, departmental faculty, and experts within their discipline.

Connected Document PhD Geology Curriculum Maps

Related Measures

M 7: Defense of Final Results
50% of students will defend their results successfully to a highly interdisciplinary departmental audience by the end of their eighth semester in residence.

Source of Evidence: Senior thesis or culminating major project

Target: No Target Established

Finding (2011-2012) - Target: Not Met
Of the 3 Ph.D. students who graduated in the last year (Aug. 2011, Dec. 2011, and May 2012), none (0%) graduated in eight semesters. This percentage of 0% falls short of our goal of 50%. The department must explore the reality of this goal.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Enforcement of timeline
Established in Cycle: 2011-2012
A greater emphasis is being placed on keeping to the departmental timeline for Ph.D. completion at all stages. This included enf...

M 8: Journal Article Submission
Within 6 months of their final defense, 50% of students will have submitted three papers to refereed journals.

Source of Evidence: Senior thesis or culminating major project

Target: No Target Established

Finding (2011-2012) - Target: Met
Of the 3 Ph.D. students who graduated during the last year (May 2011, Aug. 2011, Dec. 2011) 1 (33%) had submitted at least three papers within 6 months of their final defense. This falls short of our assessment goal of 50%. The department is attempting to put more emphasis on students completing dissertations that comprise at least three submitted papers. Students are being told the importance of published papers for their future career. Unfortunately, due to the availability of high-paying jobs in the oils industry, where publications are not important, students lack motivation to publish.

Finding (2011-2012) - Target: Met
No finding
Development of rubrics
A rubric is being developed that can be completed by faculty taking part in preliminary exams. The goal of the rubric will be only to provide assessment information and to justify committee decisions if required. This rubric will be discussed during an upcoming departmental retreat.

Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: High

Relationships (Measure | Outcomes):
Measure: Solving A Geological Problem from First Principles | Outcomes: Critical Thinking Skills

Enforcement of timeline
A greater emphasis is being placed on the timeline for Ph.D. students. This includes enforcement of the departmental timeline through the withholding of scholarships and assistantships.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcomes):
Measure: Completion of Oral Preliminary Examination | Outcomes: Critical Thinking Skills

Enforcement of timeline
A greater emphasis is being placed on keeping to the departmental timeline for Ph.D. completion at all stages. This included enforcement of rules restricting access to scholarships and assistantships for students who do not keep to the timeline. In light of our failure to meet this goal, the graduate program committee will examine average time to completion for Ph.D. degrees in comparable programs throughout the country.

Established in Cycle: 2011-2012
Implementation Status: Planned
Priority: High

Relationships (Measure | Outcomes):
Measure: Defense of Final Results | Outcomes: Written and Oral Presentation of Final Results

Enforcement of timeline
Currently DGS record keeping does not distinguish proposal submission from defense. This is being worked on. The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcomes):
Measure: Presentation of Dissertation Proposal | Outcomes: Independent Scientific Research

Enforcement of timeline
The DGS is putting a greater emphasis on completing program requirements in a timely fashion. In addition to faculty making greater efforts to academically encourage students to meet these goals, the DGS is enforcing the requirement that this goal must be met in order for a student to be eligible for DGS scholarships and continued assistantship funding. In addition, the DGS is looking into possibly rearranging the proposal and preliminary exam. This will be a topic of discussion at an upcoming retreat.

Established in Cycle: 2011-2012
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcomes):
Measure: Writing of a Dissertation Proposal | Outcomes: Independent Scientific Research
Department of Geological Sciences
Guidelines on Tenure, Promotion, and Retention

I. Committee Structure
A. Tenure: Membership, all tenured faculty with the exception of the Department Chairperson. Convenor, senior professor in the Department.
B. Promotion: Membership, all faculty of rank equal or above that to which the candidate is being evaluated for promotion, with the exception of the Department Chairperson.

II. Time Framework
A. May During the annual Faculty-Chairperson conference, the faculty member should inform the Department Chairperson of his/her intention to apply for tenure and/or promotion in the subsequent fall semester, and should provide the Chairperson with a list of potential external reviewers.
B. by August 15 Department Chairperson sends out request for letters from outside referees. This letter is to be accompanied by the candidate's vita and any reprints he/she submits.
C. September 5 Committee will be notified by senior professor of any pending tenure or promotion applications, and of any retention reviews.
D. September 5 Department Chairperson will notify each faculty member who is to be considered by the Committee.
E. October 1 All those interested in being reviewed by the Committee must submit personnel files to the Department Chairperson.
F. October 5 Department Chairperson passes on personnel files to the Committee via the senior professor.
G. November 1 All material must be submitted to the Dean's Office.

III. General Statement
The Department of Geological Sciences will adhere to the policies and guidelines concerning the fundamental personnel considerations of appointment, professional progress, review, tenure, promotion, and termination of faculty as outlined in University Personnel Policies, The Faculty Handbook, Faculty Manual of the College of Arts and Sciences, and supplementary criteria in this statement by the Department.

IV. Tenure and Promotion Criteria
A. Terminal Degree
The Ph.D. in an area of specialization is expected.

B. Teaching
Establishment of high quality in teaching is required before consideration for tenure and promotion. Excellence in teaching may be demonstrated by:
   1. student and peer evaluation,
   2. level, number, and enrollment of courses taught,
   3. supervision of graduate student research,
   4. development of new courses, and
5. innovative courses and other educational programs and enhancement of courses.

C. Research
The Department expects faculty to build and maintain nationally/internationally recognized research programs. Although successful research programs in geosciences are expected to vary in scope and detail, some or all of the following are important prerequisites: journal publications, presentations at conferences, external funding, and successful graduate students.
1. Research leading to the contribution of new knowledge in geological sciences is expected as part of each faculty member's activity.
2. Timely publication of results of research in refereed journals is required for tenure and promotion. The "standard" form of publication in the geological sciences is recognized as an article in a refereed, widely circulated journal. The "standard" journal article and other publication outlets are described in Appendix I.
3. The Department Committee will evaluate the publication record of each candidate in terms of prestige of publication outlets, overall quality of research, significance of contribution in multiply authored articles, and continuity of research at the University of Alabama.
4. The Department recognizes the significance of singly authored articles and first or second authorship of multiply authored articles. However, it is also recognized that, because of the diversity of specialties in the geological sciences, an individual researcher may make an important research contribution that does not result in first or second authorship on a publication.
5. Whereas it is understood that an applicant's record may include publications of research initiated before arrival at the University, the record is expected to show continuity of research and professional growth through inclusion of recent research at the University.
6. The Department recognizes that seeking and obtaining funding for research constitutes a positive accomplishment by faculty members. Therefore, in promotion and tenure decisions, funding for research will be considered as part of the faculty member's research performance. Potential research funds have a wide range of characteristics, including source of funds (national agencies, scientific societies, internal agencies, industrial organizations), amount of funds, and nature of support. In evaluating faculty performance as defined elsewhere in these guidelines, the Department will evaluate research grant productivity (especially sources and amount of funding) along with publications.
7. The Department recognizes that an active, viable research program includes training students, the primary results of which are completed master's theses and doctoral dissertations.
8. Quality and significance of research should be documented by letters of reference.

D. Professional Development
1. Recognition of an individual's role in contributing to and positively influencing the science and profession of geology in the Department, University, state, nation, and world.
2. Activity in appropriate professional organizations, demonstrated by:
   a. membership and attendance at professional meetings,
   b. participation in short courses, conferences, etc.,
   c. presentation of papers, leadership of field trips, convening of conferences or short courses, etc.,
   d. review of articles, books, proposals, etc., and
e. service as officer, committee member, editor, etc.

3. Professional development may be documented by letters of reference.

E. Service and Additional Accomplishments
Although teaching and research are the primary criteria for tenure and promotion decisions, service will be considered supportive. These activities may include:

1. Service on Department, College, or University committees.
2. Student advisement.
3. Coordination of student activities (field trips, club advisor, etc.).
4. Public service.
5. Professional service.

F. Letters of Reference
Letters of reference should be obtained from appropriate professional scientists outside the University. Referees should be asked to comment on quality of research and on contributions to the profession. A standard letter will be sent to all selected referees by the Department Chairperson from a list provided by the candidate, as follows: candidate names six to ten; Chairperson selects three to seven. In addition to referees named by the candidate, the Department Chairperson may solicit letters from other referees; however, the candidate must be permitted to see letters from the latter and respond if desired.

V. Review of Progress of Nontenured Faculty
The professional progress of nontenured faculty will be reviewed annually by a committee of all tenured faculty in the Department, exclusive of the Chairperson. This review requires the Faculty member to submit a retention file and will be completed in the Fall of each year [first year Faculty will reviewed in January of their first year], and a progress report will be submitted to the Department Chairperson. The report will include an evaluation of the number of publications, the equivalency of publications to ‘standard journal articles’, and a general evaluation of progress toward tenure.

VI. Standards for Tenure and Promotion
A. Tenure
A review of a faculty member's professional progress for the purpose of tenure consideration will normally not be made prior to the completion of five full years in the Department, unless the candidate presents a clearly outstanding dossier. For faculty with previous experience at other institutions, the amount of that experience to be applied toward the probationary period shall be negotiated at the time of the initial appointment and be stated in the appointment letter. Negotiated agreements related to tenure decisions should be made available to the Committee.

a. Quality teaching is prerequisite for consideration for tenure.

b. Research activity at a level that indicates potential for promotion to associate professor is required.

i. The expected level of research publication is a minimum of five standard journal articles (or equivalent) in the previous five years. The Department Committee must be provided with documentation sufficient to establish equivalence of publications as listed in Appendix I and to evaluate individual contribution in multiply authored papers.
ii. An acceptable dossier includes a minimum of one standard journal article; a strong candidate would have three or more standard journal articles. The remainder of the publication record may be made up of equivalent publications.

c. Professional development must include membership in appropriate professional organizations and presentation of papers at professional meetings.

d. Service at the Department level of committee work and advising is expected.

B. Promotion

1. Assistant Professor
In order to be a candidate for promotion from the rank of Instructor to the rank of Assistant Professor, an Instructor must have demonstrated teaching competence and shown promise in research.
   a. Quality teaching is prerequisite for consideration for promotion.
   b. Completion of the Ph.D. degree, including a dissertation, is required for promotion to Assistant Professor.

2. Associate Professor
In order to be a candidate for promotion from the rank of Assistant Professor to Associate Professor, an Assistant Professor must have demonstrated outstanding achievement in teaching or research, have shown promise of excellence in the other area, and provide evidence of recent service activities. Promotion will not normally be considered until the candidate has held the rank of Assistant Professor for four years. Prior experience credit may reduce the period.
   a. Quality teaching is prerequisite for consideration for promotion.
   b. "Outstanding achievement" or "promise of excellence" in research is demonstrated by the publication record:
      i. The expected level of research publication is a minimum of five standard journal articles (or equivalent) in the previous five years. The Department Committee must be provided with documentation sufficient to establish equivalence of publications as listed in Appendix I, and to evaluate individual contribution in multiply authored papers.
      ii. An acceptable dossier includes a minimum of two standard journal articles; a strong candidate would have four or more standard journal articles. The remainder of the publication record may be made up of equivalent publications.
   c. The expected level of grantsmanship is submission of at least five new or continuation proposals in the previous five years to agencies external to the University. Receipt of funding from an external agency is expected.
   d. Professional development should include membership in appropriate professional organizations and presentation of papers at professional meetings, and might include some leadership role in a field trip, conference, symposium, etc.
   e. Service at the Department level in committee work and advising is expected.
   f. A successful research program should include advising graduate students.

3. Professor
In order to be a candidate for promotion from the rank of Associate Professor to the rank of full Professor, an Associate Professor must have demonstrated outstanding achievement in both teaching and research and excellence in one of these. Promotion may be considered after three
years, but normally will not be considered until the candidate has held the rank of Associate Professor for five years. Credit for prior experience may reduce the period.

a. Quality teaching is prerequisite for consideration for promotion.

b. Excellence in research is demonstrated by the publication record:
   i. The expected level of research publication is a minimum of ten standard journal articles (or equivalent) in the previous ten years. The Department Committee must be provided with documentation sufficient to establish equivalence of publications as listed in Appendix I, and to evaluate individual contribution in multiply authored papers.
   ii. An acceptable dossier includes a minimum of five standard journal articles; a strong candidate would have seven or more standard journal articles. The remainder of the publication record may be made up of equivalent publications.

c. The expected level of grantsmanship is submission of at least ten new or continuation proposals in the previous ten years to agencies external to the University. Receipt of funding from an external agency is expected.

d. Professional development must include membership in appropriate professional organizations, presentation of papers at professional meetings, and some leadership role in a field trip, conference, symposium, etc.

e. Service at the Department level in committee work and advising is expected. Contributions of service outside the department are expected.

f. A successful research program should include advisement and graduation of graduate students.

Department of Geological Sciences
Revised by Department Faculty, January 24, 2002.
Appendix I

Categories of Publications in the Geological Sciences as Criteria for Promotion and/or Tenure

I. The usual types of regularly appearing publication outlets for most disciplines are also available to faculty in this department. These include:

A. **Journal article**--nationally and internationally circulated, rigorously refereed journals. This form is regarded as the standard for comparison.

B. **Article in regional journal**--refereed, nationally circulated journals in which topics generally relate to a specific region. These journals may be less rigorously refereed than the "standard" journals.

C. **Abstract**--published in a program for a meeting; refereed for inclusion in program. Represents paper presented orally, or as a poster where the individual must be present, at a meeting.

D. **Abstract**--published in a program that consists of non-refereed abstracts.

II. Several other types of publications also are common to most disciplines but appear relatively infrequently and vary so greatly in characteristics and conditions of publications that each will require special consideration. Examples include books, monographs, folios, chapters in books, encyclopedic entries, etc.

III. Several types of publications are unique to geology. These publications will require special evaluation for comparison with the more common types of publications.

Examples include:

A. **Survey publication**--refereed publication of national (USGS) or a state geological survey. Wide range of characteristics, but generally similar to journal article or book.

B. **Geologic map**--specific area at appropriate scale and based on field data collected and interpreted, using appropriate method and density of data points. May or may not be accompanied by explanatory text.

C. **Field trip guidebook**--publication commonly includes explanatory text in the format of a journal article, as well as route guide and discussion of geology at specific sites. May or may not be formally refereed. Guidebook prepared for formally scheduled field trip of a geological organization; author is selected by invitation in recognition of professional accomplishment in area of field trip.
UNDERGRADUATE INFORMATION
8-YEAR UNDERGRADUATE PROGRAM REVIEW (Form 3)
http://graduate.ua.edu/apr/formmain.html

**Directions:** The information requested on this form is essential for the internal program review committee and external consultant. In some cases, you provide the information directly below a question on this form; in other cases, it may be easier to attach the information to this form. When attaching information, please number and title each attachment, and provide a statement in the appropriate place on this form that refers the reader to the attached information.

*Items with an (*) provided by the Office of Institutional Research and Assessment.*

1. **Degree Designations**

List each of the undergraduate degree **designations** (e.g., B.A., B.S., B.S.E.) and degree **titles** (e.g., Pharmacology) in your department.

Geology degrees offered: B.A., B.S., B.S. in Geology (B.S.G.)
Marine Science/Geology degree offered: B.S.

2. **Requirements**

Describe the general **requirements** for each undergraduate major in your department and attach a typical **program of study** for each of the degree programs (majors) in your department.

Descriptions modified from the 2010-2012 Course Catalog for each degree:

**B.A.:**
Degree requirements. Students earning the bachelor of arts (BA) degree with a major in geology must complete all University, college (see pp. 52-53), and departmental degree requirements. These include the general education requirements, the following major requirements, all requirements for an approved minor, and sufficient other credits to total a minimum of 120 applicable semester hours.

Grade point average. A 2.0 grade point average in the major is required for completion of the degree. The major GPA is calculated based on all courses applicable to the major that the student has attempted at UA.

Major courses. The major in geology culminating in a BA degree requires successful completion of the following 30 semester hours:
Upper-level residency. A minimum of 12 hours of 300- or 400-level courses in the major must be earned on this campus.

Ancillary courses. This major does not require ancillary courses.

Required minor. The geology major (BA) requires completion of a minor.

B.S.:
Degree requirements. Students earning the bachelor of science (BS) degree must complete all University, college (see pp. 52-53), and departmental degree requirements. These include the general education requirements, the following major requirements, all requirements for an approved minor, and sufficient other credits to total 128 applicable semester hours.

Grade point average. A 2.0 grade point average in the major is required for completion of the degree. The major GPA is calculated based on all courses applicable to the major that the student has attempted at UA.

Major courses. The major in geology culminating in the BS degree requires successful completion of the following 36 semester hours:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 101 (Dynamic Earth)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 102 (Earth through Time)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 210 (Minerology)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 314 (Structural Geology)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 365 (Ig. &amp; Met Petrology)</td>
<td>3</td>
</tr>
<tr>
<td>GEO 367 (Sed. &amp; Strat.)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 495 (Field Geology)</td>
<td>6</td>
</tr>
</tbody>
</table>
Upper-level residency. A minimum of 12 hours of 300- or 400-level courses in the major must be earned on this campus.

Ancillary courses. Grades in ancillary courses are not computed into the major GPA. This major requires successful completion of the following courses outside the major:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 101 or CH 117 (General Chemistry I)</td>
<td>4</td>
</tr>
<tr>
<td>CH 102 or CH 118 (General Chemistry II)</td>
<td>4</td>
</tr>
<tr>
<td>CH 223 (Chem. Equilibria &amp; Analysis)</td>
<td>4</td>
</tr>
<tr>
<td>PH 105 or PH 125 (General Physics I)</td>
<td>4</td>
</tr>
<tr>
<td>PH 106 or PH 126 (General Physics II)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 125 or MATH 145 (Calculus I)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 126 or MATH 146 (Calculus II)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 227 or MATH 247 (Calculus III)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 238 (App. Diff. Equations)</td>
<td>3</td>
</tr>
</tbody>
</table>

Required minor. The geology major (BS) requires completion of a minor.

B.S.G.:
Degree requirements. Students earning the bachelor of science in geology degree (BSG) must complete all University, college (see pp. 52-53), and departmental degree requirements. These include the general education requirements, the following major requirements, and sufficient other credits to total 128 applicable semester hours.

Grade point average. A 2.0 grade point average in the major is required for completion of the degree. The major GPA is calculated based on all courses applicable to the major that the student has attempted at UA.

Major courses. The major in geology culminating in the bachelor of science in geology degree requires successful completion of the following 45 semester hours:
### Courses and Hours

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 101 (Dynamic Earth)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 102 (Earth through Time)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 210 (Minerology)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 314 (Structural Geology)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 365 (Ig. &amp; Met Petrology)</td>
<td>3</td>
</tr>
<tr>
<td>GEO 367 (Sed. &amp; Strat.)</td>
<td>4</td>
</tr>
<tr>
<td>GEO 495 (Field Geology)</td>
<td>6</td>
</tr>
<tr>
<td>2 of the following 3 classes</td>
<td>6</td>
</tr>
<tr>
<td>GEO 355 (Invert Paleontology),</td>
<td></td>
</tr>
<tr>
<td>GEO 369 (Geo phys.),</td>
<td></td>
</tr>
<tr>
<td>GEO 470 (Geochem.)</td>
<td></td>
</tr>
<tr>
<td>GEO electives</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
</tr>
</tbody>
</table>

**Upper-level residency.** A minimum of 12 hours of 300- or 400-level courses in the major must be earned on this campus.

**Ancillary courses.** Grades in ancillary courses are not computed into the major GPA. This major requires successful completion of the following courses outside the major:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 101, or CH 117 (General Chemistry I)</td>
<td>4</td>
</tr>
<tr>
<td>CH 102 or CH 118 (General Chemistry II)</td>
<td>4</td>
</tr>
<tr>
<td>PH 101, 105 or PH 125 (General Physics I)</td>
<td>4</td>
</tr>
<tr>
<td>PH 102, 106 or PH 126 (General Physics II)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 125 or MATH 145 (Calculus I)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 126 or MATH 146 (Calculus II)</td>
<td>4</td>
</tr>
</tbody>
</table>
Required minor. The major in geology for the BSG degree does not require a minor.

**B.A. Example Program of Study:**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 101</td>
<td>GEO 102</td>
</tr>
<tr>
<td>EN 101</td>
<td>EN 102</td>
</tr>
<tr>
<td>MA COURSE</td>
<td>HI COURSE</td>
</tr>
<tr>
<td>HU OR FA</td>
<td>FA COURSE</td>
</tr>
<tr>
<td>CS 102 or higher level computer science course</td>
<td>ELECTIVE COURSE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Semester 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO ELECTIVE</td>
<td>GEO ELECTIVE</td>
</tr>
<tr>
<td>C OR FL</td>
<td>C OR FL</td>
</tr>
<tr>
<td>L COURSE</td>
<td>HI/L SEQ ELECTS</td>
</tr>
<tr>
<td>SB COURSE</td>
<td>ELECTIVE COURSE</td>
</tr>
<tr>
<td>ELECTIVE COURSE</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Semester 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 300-499</td>
<td>GEO 300-499</td>
</tr>
<tr>
<td>MINOR COURSE</td>
<td>MINOR COURSE</td>
</tr>
<tr>
<td>SB COURSE</td>
<td>ELECTIVES 300-499</td>
</tr>
<tr>
<td>ELECTIVES 300-499</td>
<td>ELECTIVE COURSE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Semester 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 300-499</td>
<td>GEO 300-499</td>
</tr>
<tr>
<td>GEO ELECTIVE</td>
<td>MINOR 300-499</td>
</tr>
<tr>
<td>MINOR 300-499</td>
<td>MINOR COURSE</td>
</tr>
<tr>
<td>MINOR COURSE</td>
<td>MINOR OR ELECTIVE</td>
</tr>
<tr>
<td>W COURSE</td>
<td>W COURSE</td>
</tr>
</tbody>
</table>

**B.S. Example Program of Study:**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 101</td>
<td>GEO 102</td>
</tr>
<tr>
<td>CH 101</td>
<td>CH 102</td>
</tr>
<tr>
<td>EN 101</td>
<td>EN 102</td>
</tr>
<tr>
<td>MATH 125</td>
<td>MATH 126</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Semester 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 210</td>
<td>GEO 314</td>
</tr>
<tr>
<td>CH 223</td>
<td>MATH 238</td>
</tr>
<tr>
<td>MATH 227</td>
<td>HI COURSE</td>
</tr>
<tr>
<td>L COURSE</td>
<td>FA COURSE</td>
</tr>
<tr>
<td>SB COURSE</td>
<td>C PREREQ OR EL</td>
</tr>
<tr>
<td>Semester 5</td>
<td>Semester 6</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>GEO 365</td>
<td>GEO 367</td>
</tr>
<tr>
<td>MINOR COURSE</td>
<td>PH 106</td>
</tr>
<tr>
<td>C OR FL</td>
<td>C OR FL</td>
</tr>
<tr>
<td>HU OR FA</td>
<td>SB COURSE</td>
</tr>
<tr>
<td></td>
<td>MINOR/EL COURSE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Semester 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 495 (must be taken during Summer 1)</td>
<td>GEO 300-499</td>
</tr>
<tr>
<td>GEO 300-499</td>
<td>W COURSE</td>
</tr>
<tr>
<td>W COURSE</td>
<td>MINOR 300-499</td>
</tr>
<tr>
<td>MINOR 300-499</td>
<td>MINOR COURSE</td>
</tr>
<tr>
<td>H/L SEQ ELECTS</td>
<td></td>
</tr>
</tbody>
</table>

**B.S.G. Example Program of Study:**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 101</td>
<td>GEO 102</td>
</tr>
<tr>
<td>CH 101</td>
<td>CH 102</td>
</tr>
<tr>
<td>EN 101</td>
<td>EN 102</td>
</tr>
<tr>
<td>MATH 125</td>
<td>MATH 126</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Semester 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 210</td>
<td>GEO 314</td>
</tr>
<tr>
<td>PH 101</td>
<td>PH 102</td>
</tr>
<tr>
<td>L COURSE</td>
<td>HI COURSE</td>
</tr>
<tr>
<td>HU OR FA</td>
<td>C PREREQ OR EL</td>
</tr>
<tr>
<td>ELECTIVE COURSE</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Semester 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 365</td>
<td>GEO 355, 369 or 470</td>
</tr>
<tr>
<td>GEO 355, 369 or 470</td>
<td>GEO 367</td>
</tr>
<tr>
<td>C OR FL</td>
<td>C OR FL</td>
</tr>
<tr>
<td>H/L SEQ ELECTS</td>
<td>SB COURSE</td>
</tr>
<tr>
<td></td>
<td>ELECTIVE 300-499</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Semester 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 495 (must be taken during Summer 1)</td>
<td>GEO ELECTIVE</td>
</tr>
<tr>
<td>A COURSE</td>
<td>W COURSE</td>
</tr>
<tr>
<td>GEO ELECTIVES</td>
<td>ELECTIVE 300-499</td>
</tr>
<tr>
<td>W COURSE</td>
<td>ELECTIVE COURSES</td>
</tr>
</tbody>
</table>
3. Credit Hour Production*

Undergraduate semester credit hour production for last 3 fall semesters

<table>
<thead>
<tr>
<th>Dept</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>4,478</td>
<td>4,408</td>
<td>4,814</td>
</tr>
</tbody>
</table>

4. Courses & Sections*

Number of undergraduate courses and sections offered for last 3 fall semesters

<table>
<thead>
<tr>
<th>Level</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses</td>
<td>Sections</td>
<td>Courses</td>
</tr>
<tr>
<td>000-199</td>
<td>3</td>
<td>53</td>
<td>3</td>
</tr>
<tr>
<td>200-299</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>300-399</td>
<td>5</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>400-499</td>
<td>7</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>74</td>
<td>15</td>
</tr>
</tbody>
</table>

5. Students*

Number of students in each undergraduate degree program (both 1st and 2nd majors) for last 3 fall semesters

<table>
<thead>
<tr>
<th>Major</th>
<th>Code</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Major 1</td>
<td>Major 2</td>
<td>Major 1</td>
<td>Major 2</td>
</tr>
<tr>
<td>GEOLOGY</td>
<td>GEO</td>
<td>70</td>
<td>72</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>72</td>
<td>2</td>
<td>72</td>
</tr>
</tbody>
</table>
6. Degrees*

Number of degrees conferred for each undergraduate degree program for last 3 August + December + May commencements

<table>
<thead>
<tr>
<th>Major Level</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOLOGY Bachelors</td>
<td>1st Major</td>
<td>2nd Major</td>
<td>1st Major</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>15</td>
<td>1</td>
</tr>
</tbody>
</table>

7. ACT/SAT Scores*

Average ACT or SAT scores and undergraduate GPA for each undergraduate degree program for last 3 fall terms

<table>
<thead>
<tr>
<th>Major Code</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>ACT</td>
<td>GPA</td>
<td>ACT</td>
</tr>
<tr>
<td>GEO</td>
<td>23.76</td>
<td>2.75</td>
<td>24.16</td>
</tr>
</tbody>
</table>

8. Letter Grades*

Number and percentage of letter grades (upper and lower division) assigned in undergraduate courses for past 3 years (including NC, W and DFWNC Total)
<table>
<thead>
<tr>
<th>Spring</th>
<th>2009</th>
<th></th>
<th>2010</th>
<th></th>
<th>2011</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOWER</td>
<td>%</td>
<td>UPPER</td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>A</td>
<td>99</td>
<td>11.6</td>
<td>30</td>
<td>29.4</td>
<td>107</td>
<td>9.9</td>
</tr>
<tr>
<td>A-</td>
<td>91</td>
<td>10.6</td>
<td>7</td>
<td>6.9</td>
<td>81</td>
<td>7.5</td>
</tr>
<tr>
<td>B+</td>
<td>78</td>
<td>9.1</td>
<td>9</td>
<td>8.8</td>
<td>76</td>
<td>7.1</td>
</tr>
<tr>
<td>B</td>
<td>138</td>
<td>16.1</td>
<td>11</td>
<td>10.8</td>
<td>176</td>
<td>16.3</td>
</tr>
<tr>
<td>B-</td>
<td>76</td>
<td>8.9</td>
<td>7</td>
<td>6.9</td>
<td>109</td>
<td>10.1</td>
</tr>
<tr>
<td>C+</td>
<td>71</td>
<td>8.3</td>
<td>12</td>
<td>11.8</td>
<td>74</td>
<td>6.9</td>
</tr>
<tr>
<td>C</td>
<td>78</td>
<td>9.1</td>
<td>3</td>
<td>2.9</td>
<td>141</td>
<td>13.1</td>
</tr>
<tr>
<td>C-</td>
<td>41</td>
<td>4.8</td>
<td>2</td>
<td>2.0</td>
<td>44</td>
<td>4.1</td>
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<tr>
<td>D+</td>
<td>21</td>
<td>2.5</td>
<td>1</td>
<td>1.0</td>
<td>20</td>
<td>1.9</td>
</tr>
<tr>
<td>D</td>
<td>17</td>
<td>2.0</td>
<td>1</td>
<td>1.0</td>
<td>33</td>
<td>3.1</td>
</tr>
<tr>
<td>D-</td>
<td>6</td>
<td>0.7</td>
<td>1</td>
<td>1.0</td>
<td>19</td>
<td>1.8</td>
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<tr>
<td>F</td>
<td>32</td>
<td>3.7</td>
<td>3</td>
<td>2.9</td>
<td>61</td>
<td>5.7</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>0.1</td>
<td>1</td>
<td>1.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>P</td>
<td>3</td>
<td>2.9</td>
<td>0</td>
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<tr>
<td>NC</td>
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<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>W</td>
<td>106</td>
<td>12.4</td>
<td>10</td>
<td>9.8</td>
<td>130</td>
<td>12.1</td>
</tr>
<tr>
<td>AU</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>OTH</td>
<td>2</td>
<td>0.2</td>
<td>1</td>
<td>1.0</td>
<td>6</td>
<td>0.6</td>
</tr>
<tr>
<td>PAUOTH</td>
<td>675</td>
<td>78.8</td>
<td>86</td>
<td>84.3</td>
<td>814</td>
<td>75.6</td>
</tr>
<tr>
<td>DFWNC</td>
<td>182</td>
<td>21.2</td>
<td>16</td>
<td>15.7</td>
<td>263</td>
<td>24.4</td>
</tr>
<tr>
<td>Total</td>
<td>857</td>
<td>100.0</td>
<td>102</td>
<td>100.0</td>
<td>1,077</td>
<td>100.0</td>
</tr>
</tbody>
</table>
9. Changes (Credit Hours)

Describe any anticipated changes in undergraduate semester credit hour production in your department for the next 3 years and discuss the reasons for anticipated changes.

Credit hour production is expected to rise due to the addition of more 10X sections as the university grows and more faculty are hired. Increasing numbers of majors (As of 8/30/2012 there are 85 declared majors) will lead to more credit hours from upper level classes as well.

10. Changes (Students)

Describe any anticipated changes in the number of undergraduate students in specific majors in your department for the next 3 years and discuss the reasons for anticipated changes.

The number of Geology majors will likely increase because we are actively recruiting more each year. The number of majors has increased since the last two external review periods. In the 1992-1994 report there was an average of 43 majors. In 1999-2001 the average was 31. In the current review period (2009-2011) the average number of majors is 71 (These data exclude Marine Science/Geology majors since such data from earlier periods was not reported). The department has more than doubled its number of majors since the last review, growing at a faster pace (~129%) than the university as a whole (~70%). Of the current majors (Fall 2012), 21 pursue the B.A., 7 the B.S., 52 the B.S.G., and 5 the Marine Science/Geology degrees. This distribution does not seem likely to change dramatically in the near future.

11. Curriculum Reviews

Describe the department’s process for regular reviews of the undergraduate curriculum. Summarize the primary actions taken as a result of undergraduate curriculum reviews since the last OAA program review.

The undergraduate curriculum is discussed at faculty and Undergraduate Curriculum Committee meetings several times a semester. Detailed discussion is conducted in preparation for the Course Catalog (in the past taking place every three years, now it is annual). Over the past two years curriculum discussion are more in depth and detailed as a result of more extensive annual departmental assessment (now conducted each semester online via WEAVE). Subsequently a planning committee
was formed to propose more sweeping changes to the curriculum as described in the Departmental Report.

Changes implemented since the last review period: The majority of the changes have focused on improving elective options. Changes to the required core GEO classes have been more limited. There have been no changes to the B.A. core GEO curriculum. The B.S. and B.S.G core GEO curricula changed in that GEO 201 (Mineralogy) became a 4 hour course due to the addition of optical mineralogy training after the removal of GEO 215 (Optical Mineralogy, 2 hour course). One hour was added to the GEO elective expectation. in both of these degree tracks. Two new introductory classes (GEO 104: Hazardous Earth and GEO 105: Sustainable Earth) were also added. The available range of elective classes expanded and changed with the addition of new faculty, and perhaps most significantly with the addition of 3 credit hour internship and research classes. More significant changes to the curriculum are now being proposed.

12. Undergraduate Degree Programs

The president and chancellor are looking for opportunities for the three campuses of The University of Alabama System to work together more closely. What is the feasibility of offering one or more of your undergraduate degree programs with UAB and/or UAH?

Note. Working with other institutions on an existing degree program might take a number of forms, e.g., beginning to offer a long-standing UA program as a “cooperative” program with UA still the primary institution for program resources and administration. Alternatively, it could take the form of a “shared” program that is mutually sponsored by two or more institutions but would not be terminated if one of the institutions becomes unable to meets its obligations to the shared program.

Potential educational collaboration with other campuses within the Alabama system is limited. UAB and UAH offer no geology major. UAH includes an “Earth System Science” degree program and research center that is primarily focused on atmospheric science. A particular difficulty is the extensive lab requirements in geology classes. Hands-on teaching is fundamental to geology and cannot be effectively conducted through distance learning.
1. Student Satisfaction Survey Results (Undergraduate) for Geological Sciences
GRADUATING SENIOR SURVEY RESULTS
2010-2012

DEPARTMENT OF GEOLOGICAL SCIENCES

Respondent Characteristics

Seven of 42 graduating seniors (16.7%) from the Department of Geological Sciences completed the instrument during the 2010-11 and 2011-12 academic years.

Four respondents graduated during the 2010-2011 academic year and three respondents graduated during the 2011-2012 academic year. Four (57.1%) respondents were male and three were female.

Survey Results

Percentages of structured responses are reported in tables. Respondent open-ended comments are given an ID number and highlighted in *red italic text*. The ID number allows comparison and context among all open-ended questions. For example, all open-ended responses for each number are given by the same graduating senior.
**Question 2: General Knowledge, Skills, Personal Development**

To what extent do you think your education at UA contributed to your knowledge, skills, and/or personal development in each of the following areas?

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>N</th>
<th>Percent</th>
<th>Very Much</th>
<th>Somet</th>
<th>Very Little</th>
<th>Not at All</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing skills</td>
<td>GEO</td>
<td>7</td>
<td>57.1</td>
<td>42.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Listening skills</td>
<td>GEO</td>
<td>7</td>
<td>85.7</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Comprehension skills (written information)</td>
<td>GEO</td>
<td>7</td>
<td>57.1</td>
<td>28.6</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Mathematical skills</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>42.9</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Scientific methods of inquiry</td>
<td>GEO</td>
<td>7</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Analytic skills</td>
<td>GEO</td>
<td>7</td>
<td>71.4</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Computer skills</td>
<td>GEO</td>
<td>7</td>
<td>57.1</td>
<td>14.3</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Public speaking skills</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>57.1</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Information gathering skills</td>
<td>GEO</td>
<td>7</td>
<td>71.4</td>
<td>14.3</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Function as part of a team</td>
<td>GEO</td>
<td>7</td>
<td>71.4</td>
<td>0.0</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Appreciate racial equality</td>
<td>GEO</td>
<td>3</td>
<td>33.3</td>
<td>66.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Note: Appreciate racial equality was added in 2011-2012.
**Question 3: Department and Department Faculty**

Please assess your department and its faculty members for each of the following:

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>N</th>
<th>Frequently</th>
<th>Seldom</th>
<th>Occasionally</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you conduct or assist in a research project in your major?</td>
<td>GEO 7</td>
<td>28.6</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
</tr>
<tr>
<td>Did at least one faculty member in your major express a special interest in your academic progress?</td>
<td>GEO 7</td>
<td>42.9</td>
<td>42.9</td>
<td>14.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Did at least one faculty member in your major express a special interest in your career development?</td>
<td>GEO 6</td>
<td>50.0</td>
<td>33.3</td>
<td>16.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Were you unable to enroll in a required course in your major because all sections were filled?</td>
<td>GEO 7</td>
<td>14.3</td>
<td>42.9</td>
<td>14.3</td>
<td>28.6</td>
</tr>
<tr>
<td>Did faculty in your major encourage you to be an actively involved learner?</td>
<td>GEO 7</td>
<td>71.4</td>
<td>14.3</td>
<td>14.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Did faculty in your major give you prompt feedback?</td>
<td>GEO 7</td>
<td>57.1</td>
<td>14.3</td>
<td>28.6</td>
<td>0.0</td>
</tr>
<tr>
<td>Did faculty in your major care about your academic success?</td>
<td>GEO 7</td>
<td>57.1</td>
<td>42.9</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Question 4: Major Courses, Faculty, Instruction, Advising

How would you evaluate the courses, faculty, instruction, and advising in your major?

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>Percent</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>No Opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>7</td>
<td>42.9</td>
<td>42.9</td>
<td>0.0</td>
<td>0.0</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Instruction in 100 and 200 level courses in your major was

Instruction in 300 level and above courses in your major was

Instruction provided by departmental graduate teaching assistants (GTAs) in your major was

The overall quality of your major was

The quality of courses as preparation for employment after graduation in your major was

The quality of courses as preparation for graduate or professional school in your major was

Advising in your major was

Question 5: Department Facilities

How would you evaluate your department's facilities?

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>Percent</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>7</td>
<td>42.9</td>
<td>57.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

The classroom facilities in your department were

The non-computer laboratory facilities for courses in your major were

The departmental computer facilities for courses in your major were
Question 6: Core Courses, Faculty, Instruction

How would you evaluate the courses, faculty, and instruction in your core curriculum/general education classes?

<table>
<thead>
<tr>
<th>Major</th>
<th>N</th>
<th>Frequently</th>
<th>Occasionally</th>
<th>Seldom</th>
<th>Never</th>
<th>Took core Elsewhere</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>7</td>
<td>57.1</td>
<td>42.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Instruction provided by graduate teaching assistants (GTAs) in core courses was good.

Were you unable to enroll in a core course because all sections were filled?

Did faculty in your core courses encourage you to be an actively involved learner?

Did faculty in your core courses give you prompt feedback?

Did faculty in your core courses care about your academic success?

Additional comments on the above core curriculum courses, faculty, and instruction. N = 1

6 Mathematics at UA is terrible until Calculus. The online setup does more harm than good.
### Question 7: Campus Offices, Services, Opportunities

How would you evaluate these offices, services, and opportunities?

<table>
<thead>
<tr>
<th>Service</th>
<th>MAJOR</th>
<th>N</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration process</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>57.1</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Financial aid services</td>
<td>GEO</td>
<td>7</td>
<td>14.3</td>
<td>14.3</td>
<td>14.3</td>
<td>0.0</td>
<td>57.1</td>
</tr>
<tr>
<td>Campus food services</td>
<td>GEO</td>
<td>7</td>
<td>14.3</td>
<td>42.9</td>
<td>28.6</td>
<td>0.0</td>
<td>14.3</td>
</tr>
<tr>
<td>Supply store services</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>42.9</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Campus health services</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
<td>0.0</td>
<td>28.6</td>
</tr>
<tr>
<td>Campus counseling (not career) services</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>14.3</td>
<td>14.3</td>
<td>0.0</td>
<td>42.9</td>
</tr>
<tr>
<td>Business services/cashier/student accounts</td>
<td>GEO</td>
<td>7</td>
<td>42.9</td>
<td>28.6</td>
<td>28.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>University Career Center</td>
<td>GEO</td>
<td>7</td>
<td>14.3</td>
<td>14.3</td>
<td>14.3</td>
<td>0.0</td>
<td>57.1</td>
</tr>
<tr>
<td>Campus residence life programs for those in University-owned housing</td>
<td>GEO</td>
<td>7</td>
<td>14.3</td>
<td>14.3</td>
<td>28.6</td>
<td>0.0</td>
<td>42.9</td>
</tr>
<tr>
<td>Opportunities to participate in campus recreational activities</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
<td>0.0</td>
<td>28.6</td>
</tr>
<tr>
<td>Opportunities to participate in other extra-curricular activities</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
<td>0.0</td>
<td>28.6</td>
</tr>
<tr>
<td>Opportunities to participate in community service projects</td>
<td>GEO</td>
<td>7</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
<td>0.0</td>
<td>28.6</td>
</tr>
</tbody>
</table>

Additional comments on the offices, services, and opportunities. N = 1

1. *Online services are sufficient.*
**Question 8: Professional Growth from Field Experience**

How would you evaluate your experience with a co-op, internship, practicum, student teaching, or other field experience in terms of its contribution to your personal and professional growth?

<table>
<thead>
<tr>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR= GEO</td>
<td></td>
</tr>
<tr>
<td>N = 7</td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>71.4</td>
</tr>
<tr>
<td>Good</td>
<td>14.3</td>
</tr>
<tr>
<td>Fair</td>
<td>14.3</td>
</tr>
<tr>
<td>Poor</td>
<td>0.0</td>
</tr>
<tr>
<td>I did not participate in any of those activities</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Question 9: Person who made Most Significant Positive Contribution**

Identify the person at UA who made the most significant positive contribution to your education: N = 6

1. *Stowell, Harold*
2. *Goodliffe, Andrew*
3. *Dr. Fred Andrus*
4. *Fred Andus*
5. *Fred Andrus*
6. *Fred C. Andrus*
Question 10: Overall UA Intellectual Environment

All things considered, how would you characterize the intellectual environment at UA?

<table>
<thead>
<tr>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR= GEO</td>
<td>7</td>
</tr>
<tr>
<td>N =</td>
<td>5</td>
</tr>
<tr>
<td>Very strong</td>
<td>14.3</td>
</tr>
<tr>
<td>Strong</td>
<td>71.4</td>
</tr>
<tr>
<td>Average</td>
<td>14.3</td>
</tr>
<tr>
<td>Weak</td>
<td>0.0</td>
</tr>
<tr>
<td>Very Weak</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Please explain your reason(s) for your answer. N = 5

1. There are many qualified people that provide a solid intellectual environment, but I can't say the overall environment of participation or the ability represented by the student body is unique among similar schools.
2. There is a very studious feeling throughout the campus. The libraries are wonderful.
3. The libraries always had some students there studying, finals or not. Honor societies and clubs, and the involvement with the graduate students and the undergrad.
4. Math is a disaster. 100 level science classes (Chemistry and Physics) are far above and beyond the course level. Those were some of the most difficult classes including my Geo 300-400 level classes. That doesn't seem right/
5. The education I received for my geology major and geography minor were excellent. However, the operation of the math department is poor. I feel that the math lab is a crutch to many students, myself included. I received a NC in math 112 four times before I passed the class. It wasn't until I began taking my 400 level geology courses that I was able to understand and apply math. The math system is unfair, and has a bit of a factory feel to it. I love the University of Alabama but more attention needs to be paid to the math department, I know too many bright individuals that struggle with math at UA.
Question 11: Overall UA Education Received

All things considered, how would you evaluate the overall education that you received at UA?

Percent

| MAJOR= GEO |    |
| N = 7     |    |
| Excellent | 57.1|
| Good      | 42.9|
| Fair      | 0.0 |
| Poor      | 0.0 |

Please explain your reason(s) for your answer. N = 5

1. The quality of any education received anywhere is dependent on the individual being educated.
2. The only person to blame for not an excellent education at this university is myself. The professors are wonderful, especially in my department (Geological Sciences).
3. It was challenging, professors knew their fields and cared about their students understanding it.
4. Dr. Witt has expanded the school too much. Too big. The additions of the many new, and oversized fraternity houses is ridiculous.
5. The faculty of the geology department, namely Harrold Stowell, Fred Adrus, and Joshua Schwartz are exceptional professors. Working with them has changed my life for the better, I am thankful to be a part of the knowledge they've acquired.
Question 12: Attend UA Again

If you had to start over again, would you still choose to attend UA?

<table>
<thead>
<tr>
<th>Major</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>7</td>
</tr>
<tr>
<td>Definitely</td>
<td>57.1</td>
</tr>
<tr>
<td>Probably</td>
<td>14.3</td>
</tr>
<tr>
<td>Probably not</td>
<td>28.6</td>
</tr>
<tr>
<td>Definitely not</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Please explain your reason(s) for your answer. N = 4

1. I can't say that attending another state school regionally would have been of greater benefit. The only reason I would choose another school is a free ride to an ivy league school.
2. Although my experience was wonderful, I am a Tuscaloosa native and I believe it might have been a better idea to move away for college instead of staying in my home town. This is the ONLY reason why I would choose to attend a different college. The Univer
3. It's a legacy for me and it feels like a second home.
7. I would have began as a geology major. I started as an Environmental Science major and changed it after my 2nd year.
Question 13: Choose Major Again

If you had to start over again, would you still choose this major?

<table>
<thead>
<tr>
<th>Percent</th>
<th>MAJOR=GEO</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=7</td>
<td></td>
</tr>
<tr>
<td>Definitely</td>
<td>71.4</td>
</tr>
<tr>
<td>Probably</td>
<td>14.3</td>
</tr>
<tr>
<td>Probably not</td>
<td>14.3</td>
</tr>
<tr>
<td>Definitely not</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Please explain your reason(s) for your answer. N = 4

1. I love geology and have been interested in the science for many years, but the ultimate use for any education among many uses is the benefit it renders to the community. The skill sets and knowledge required by many employers are not being taught to the extent that it should.

2. I was changed to this major from engineering. I would have started out in Geological Sciences to begin with if I had the chance to start all over. The Engineering department is set apart from the other colleges in that many core classes are not required, due to the rigorous math and science curriculum. Starting out as an engineer and switching to geology made it very difficult to acclimate.

3. I switched to my major halfway through my college career. My GPA would have been much better if I had chosen it from the start.

7. I was born with a desire for studying the Earth. The moment I walked into the museum of Natural History in Smith Hall and gazed at the Basilosaurus I knew that I was in the right place.
### Question 14: Reason for Attending UA

What is the primary reason you chose to attend UA?

<table>
<thead>
<tr>
<th>Percent</th>
<th>MAJOR= GEO</th>
</tr>
</thead>
<tbody>
<tr>
<td>N =</td>
<td>7</td>
</tr>
<tr>
<td>Academic Reputation</td>
<td>0.0</td>
</tr>
<tr>
<td>Cost</td>
<td>0.0</td>
</tr>
<tr>
<td>Family</td>
<td>28.6</td>
</tr>
<tr>
<td>Friends came here</td>
<td>0.0</td>
</tr>
<tr>
<td>Major/Field of Study</td>
<td>0.0</td>
</tr>
<tr>
<td>Location</td>
<td>28.6</td>
</tr>
<tr>
<td>Scholarship/Financial Aid</td>
<td>14.3</td>
</tr>
<tr>
<td>Social Life</td>
<td>0.0</td>
</tr>
<tr>
<td>Athletics</td>
<td>0.0</td>
</tr>
<tr>
<td>Other: Please list</td>
<td>(see comment below)</td>
</tr>
</tbody>
</table>

The following is the list of comments from the “Other” category.  N = 2

6. *Everything a major University had but a smaller student body (not anymore)*

7. *Natural History Museum*
Question 15: Participation in Clubs and Organizations

Check all of the clubs or organizations that you participated in actively while in graduate school at UA.

<table>
<thead>
<tr>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MAJOR= GEO</td>
<td>7</td>
</tr>
<tr>
<td>N = 7</td>
<td></td>
</tr>
<tr>
<td>Student government</td>
<td>0.0</td>
</tr>
<tr>
<td>Intercollegiate athletics</td>
<td>14.3</td>
</tr>
<tr>
<td>Volunteer service</td>
<td>14.3</td>
</tr>
<tr>
<td>Independent study/research</td>
<td>28.6</td>
</tr>
<tr>
<td>Academic clubs</td>
<td>14.3</td>
</tr>
<tr>
<td>Study abroad or overseas program</td>
<td>0.0</td>
</tr>
<tr>
<td>Political clubs</td>
<td>0.0</td>
</tr>
<tr>
<td>Social fraternity or sorority</td>
<td>14.3</td>
</tr>
<tr>
<td>Cultural clubs</td>
<td>28.6</td>
</tr>
<tr>
<td>Religious services/clubs</td>
<td>14.3</td>
</tr>
<tr>
<td>Honor societies</td>
<td>0.0</td>
</tr>
<tr>
<td>Student newspaper/Corolla</td>
<td>0.0</td>
</tr>
<tr>
<td>Million Dollar Band</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Did you hold an office in any of the above organizations? Yes: N = 1

The following are the offices and remarks listed by the respondents.

3 Vice Regent for one term

Question 16: Work Status Throughout College

Generally, what was your work status throughout college?

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>On-Campus Full-Time</th>
<th>On-Campus Part-Time</th>
<th>Off-Campus Full-Time</th>
<th>Off-Campus Part-Time</th>
<th>Did not work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>GEO 7</td>
<td>14.3</td>
<td>0.0</td>
<td>0.0</td>
<td>57.1</td>
<td>28.6</td>
</tr>
<tr>
<td>Sophomore</td>
<td>GEO 7</td>
<td>0.0</td>
<td>0.0</td>
<td>14.3</td>
<td>57.1</td>
<td>28.6</td>
</tr>
<tr>
<td>Junior</td>
<td>GEO 7</td>
<td>0.0</td>
<td>28.6</td>
<td>28.6</td>
<td>28.6</td>
<td>14.3</td>
</tr>
<tr>
<td>Senior</td>
<td>GEO 7</td>
<td>0.0</td>
<td>28.6</td>
<td>28.6</td>
<td>0.0</td>
<td>42.9</td>
</tr>
</tbody>
</table>

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Question 17: Plans Following Graduation.

Indicate the ONE best description of your plans following graduation.

<table>
<thead>
<tr>
<th>Percent</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAJOR= GEO</td>
</tr>
<tr>
<td>42.9</td>
<td>N = 7</td>
</tr>
<tr>
<td>14.3</td>
<td>I do not know yet</td>
</tr>
<tr>
<td>0.0</td>
<td>I have accepted a job related to my field of study</td>
</tr>
<tr>
<td>0.0</td>
<td>I have accepted a job not related to my field of study</td>
</tr>
<tr>
<td>28.6</td>
<td>I plan to continue in my current position</td>
</tr>
<tr>
<td></td>
<td>I will be going to a graduate or professional school full-time next year:</td>
</tr>
<tr>
<td></td>
<td>What school? (see comments below)</td>
</tr>
<tr>
<td>0.0</td>
<td>I will be going to a graduate or professional school part-time next year</td>
</tr>
<tr>
<td></td>
<td>and working part-time:</td>
</tr>
<tr>
<td></td>
<td>What school? (see comments below)</td>
</tr>
<tr>
<td>14.3</td>
<td>I will take more undergraduate courses</td>
</tr>
<tr>
<td>14.3</td>
<td>I am still seeking employment</td>
</tr>
<tr>
<td>0.0</td>
<td>I am not currently seeking employment and do not plan to attend school next year</td>
</tr>
<tr>
<td>0.0</td>
<td>I am entering military service</td>
</tr>
<tr>
<td>0.0</td>
<td>Other (see comments below)</td>
</tr>
</tbody>
</table>

The following is the list of comments from the above questions.

I will be going to a graduate or professional school full-time next year:
What school?

3 University of South Alabama
5 University of Alabama

I will be going to a graduate or professional school part-time next year and working part-time:
What school?

Other
Question 18: Additional Comments

Additional comments: Elaborate on anything covered or not covered in the survey.  $N = 0$
GRADUATE INFORMATION
Directions: The information requested on this form is essential for the internal program review committee and external consultant. In some cases, you provide the information directly on this form; in other cases, it may be easier to attach the information to this form. When attaching information, please number and title each attachment and provide a statement in the appropriate place on this form that refers the reader to the attached information.

*Items with an (*) provided by the Office of Institutional Research and Assessment.

1. Designations and Titles

List each of the graduate degree designations (M.A., M.S., Ph.D., etc.) and degree titles (e.g., Pharmacology) in your department.

M.S. Geology, Ph.D. Geology, M.S. Marine Science Geology

2. Requirements and Program of Study

Describe the general requirements for each graduate degree program in your department and attach a typical program of study for each of the graduate programs.

M.S. Geology
At least 24 hours of 400-600 level coursework including:
1. No more than 6 hours of 400-level courses
2. No more than 3 hours of GEO 598 Non-Thesis Research
3. At least 18 hours in the Geological Sciences discipline
4. A maximum of 12 hours transferred from other universities

In addition, students must complete:
1. 6 hours in GEO 599 Thesis Research
2. 2 hours of GEO535/536 Graduate Seminar in Geology

Additional requirements in include:
1. A GPA of >=3.0 for graduate courses
2. 75% of hours complete with a grade of A or B
3. A maximum of 20% of the students required course can be taken pass/fail.
   The remaining course must be taken for a letter grade

A thesis
Ph.D. Geology
At least 48 hours of coursework beyond the baccalaureate degree including:
1. A maximum of 12 hours of GEO 698 Non-Dissertation Research or GEO 598 Non-Thesis Research
2. A maximum of 24 hours transferred from other universities
In addition the students must complete
1. 24 hours of GEO 699 Dissertation Research
2. 4 hours of GEO635/636 Graduate Seminar in Geology
Additional requirements in include:
1. A GPA of $\geq 3.0$ for graduate courses
2. 75% of hours complete with a grade of A or B
3. A maximum of 20% of the students required course can be taken pass/fail.
   The remaining course must be taken for a letter grade
4. Once a student is admitted to candidacy they must be enrolled in 3 hours of GEO 699 Dissertation Research each semester
A dissertation

M.S. Marine Science Geology
At least 24 hours of 400-600 level coursework including:
1. No more than 6 hours of 400-level courses
2. No more than 3 hours of GEO 598 Non-Thesis Research
3. A maximum of 12 hours transferred from other universities
In addition, students must complete:
1. 6 hours in GEO 599 Thesis Research
2. 2 hours of GEO535/536 Graduate Seminar in Geology
Additional requirements in include:
1. A GPA of $\geq 3.0$ for graduate courses
2. 75% of hours complete with a grade of A or B
3. A maximum of 20% of the students required course can be taken pass/fail.
   The remaining course must be taken for a letter grade
A thesis

3. Graduate Curriculum Reviews

Describe the department’s process for regular reviews of the graduate curriculum. Summarize the primary actions taken as a result of graduate curriculum reviews since the last OAA program review.

Proposals for new courses are discussed with the department chair and at faculty meetings. This often takes place after a new faculty member has been hired and there are opportunities for course offerings to expand into previously unexplored
areas.

A major review of our graduate curriculum has taken place since January 2012. Based on this review we have a proposal on the table to reorganize our courses into three areas of emphasis: 1) Environmental Geoscience; 2) Tectonics; and 3) Energy and Mineral Resources. We have also proposed to introduce a new research skills examination in the second semester for Ph.D. students. This will allow us to evaluate the potential for a Ph.D. student to successfully complete their program and identify any deficiencies at an early stage.

The department will also apply to participate in the University Scholars Program. This will give exceptional undergraduates the opportunity to complete some graduate coursework during their senior year, completing the M.S. program within one year of receiving their baccalaureate degree.

A recommendation that came out of the previous 8 year review was to explore the possibility of offering a professional M.S. degree. After some thought it has been determined that we will not pursue this for several reasons:

1) Major employers of geoscience Masters degree graduates prefer students who have demonstrated the ability to conduct research and write a thesis. In addition, the key demographic (i.e., a large group of working B.S. professionals) required for such a program to be successful is not present in Tuscaloosa;

2) The Department has the one of the highest levels of per-faculty funding in the College. Funded research projects would be jeopardized should students switch from a thesis based Master’s to the Professional Master’s program;

3) To increase its reputation as a research department, DGS faculty must increase the number and quality of scientific publications. Research productivity would be harmed should many of the students who would have traditionally participated in the thesis based program instead opt for the Professional Master’s program; and

4) The Department has no problem in recruiting high quality students to the graduate program, with graduate program enrollment currently at a historic high. The Department may reconsider this decision if graduate program enrollment drops substantially in the future.
4. Courses and Sections*

Number of graduate courses and sections offered for last 3 fall semesters

<table>
<thead>
<tr>
<th>Level</th>
<th>2009 Courses</th>
<th>2009 Sections</th>
<th>2010 Courses</th>
<th>2010 Sections</th>
<th>2011 Courses</th>
<th>2011 Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>500-599</td>
<td>11</td>
<td>25</td>
<td>11</td>
<td>27</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>600+</td>
<td>5</td>
<td>14</td>
<td>5</td>
<td>16</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>39</td>
<td>16</td>
<td>43</td>
<td>14</td>
<td>45</td>
</tr>
</tbody>
</table>

5. Credit Hour Production*

Graduate semester credit hour production for last 3 fall semesters

<table>
<thead>
<tr>
<th>Dept</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>340</td>
<td>311</td>
<td>315</td>
</tr>
</tbody>
</table>

6. Slash-Listed and Graduate Courses

Give the number of slash-listed courses offered in the department and describe any efforts to increase the number of graduate-only courses for graduate students, i.e., decrease the number of slash-listed courses.

Thirteen slash-listed course are offered (though many are offered only as needed). The department has not focused resources on reducing the number of slash listed courses due to the minimal number of our undergraduates who on graduation enter our graduate program.

- GEO 401/501 Climate Change
- GEO 406/506 Hydrogeology
- GEO 407/507 Seismology
- GEO 416/516 Volcanology
- GEO 430/530 Ore Deposits
- GEO 445/545 Multichannel Seismic Processing
- GEO 446/546 Scientific Computing
- GEO 457/557 Geological History of the Vertebrates and Land Plants
- GEO 460/560 Watershed Hydrology
- GEO 462/562 Quaternary Environments
- GEO 470/570 General Geochemistry
7. Students in Graduate Degree Programs*

Number of students in each graduate degree program for last 3 fall semesters

<table>
<thead>
<tr>
<th>Major</th>
<th>Level</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>Masters</td>
<td>28</td>
<td>28</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Doctoral</td>
<td>20</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>MSGG</td>
<td>Masters</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>48</td>
<td>47</td>
<td>54</td>
</tr>
</tbody>
</table>

8. Admission Test Scores*

Average admissions test score, if such a test is required, for students beginning each graduate degree program for last 3 years (all terms).

<table>
<thead>
<tr>
<th>Major</th>
<th>Level</th>
<th>Test</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>Masters</td>
<td>GRE Total</td>
<td>14</td>
<td>1197</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Doctoral</td>
<td>GRE Total</td>
<td>3</td>
<td>1127</td>
<td>4</td>
</tr>
<tr>
<td>MSGG</td>
<td>Masters</td>
<td>GRE Total</td>
<td>1</td>
<td>1130</td>
<td></td>
</tr>
</tbody>
</table>

9. Degrees Conferred*

Number of degrees conferred for each graduate degree program for last 3 commencements in August+December+May.

<table>
<thead>
<tr>
<th>Major</th>
<th>Level</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO</td>
<td>Masters</td>
<td>1</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Doctoral</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4</td>
<td>12</td>
<td>10</td>
</tr>
</tbody>
</table>
10. Time to Complete Degree

For each graduate degree offered in the department, state the average length of time to complete the degree and, if available, attach a table listing graduates from the last 5 years, the degree(s) each completed, and the time (years and months) taken for each to complete their respective graduate degrees.

Ph.D. Geology (Aug. 2007-Aug. 2012): Average time to complete = 5 years 4 months

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Start Date</th>
<th>End Date</th>
<th>Time to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peng, L</td>
<td>Aug. 2002</td>
<td>Aug. 2007</td>
<td>5 years</td>
</tr>
<tr>
<td>Liu, J</td>
<td>Jan. 2003</td>
<td>Aug. 2007</td>
<td>4 years 7 months</td>
</tr>
<tr>
<td>Bordoloi, S</td>
<td>Aug. 2002</td>
<td>Dec. 2007</td>
<td>5 years 4 months</td>
</tr>
<tr>
<td>Yonggiang, Q</td>
<td>Aug. 2003</td>
<td>Dec. 2007</td>
<td>4 years 4 months</td>
</tr>
<tr>
<td>Murgulet, D</td>
<td>Aug. 2005</td>
<td>Dec. 2009</td>
<td>4 years 4 months</td>
</tr>
<tr>
<td>Bhattacharyya, S</td>
<td>Aug. 2003</td>
<td>May 2010</td>
<td>6 years 9 months</td>
</tr>
<tr>
<td>Ebersole, S</td>
<td>Aug. 2004</td>
<td>May 2010</td>
<td>5 years 9 months</td>
</tr>
<tr>
<td>Murgulet, V</td>
<td>Aug. 2002</td>
<td>Aug. 2010</td>
<td>7 years</td>
</tr>
<tr>
<td>Bayo, M</td>
<td>Aug. 2005</td>
<td>Aug. 2010</td>
<td>6 years</td>
</tr>
<tr>
<td>Bianchi, M</td>
<td>Aug. 2006</td>
<td>Dec. 2010</td>
<td>4 years 4 months</td>
</tr>
<tr>
<td>Lambert, J</td>
<td>Aug. 2004</td>
<td>Dec. 2010</td>
<td>6 years 4 months</td>
</tr>
<tr>
<td>Hughes, K</td>
<td>Jan. 2007</td>
<td>Aug. 2011</td>
<td>4 years 7 months</td>
</tr>
<tr>
<td>Cao. G</td>
<td>Aug. 2007</td>
<td>Dec. 2011</td>
<td>4 years 4 months</td>
</tr>
</tbody>
</table>
M.S. Geology (Aug. 2007-Aug. 2012): Average time to complete = 3 years 3 months (*note that this includes student receiving the plan II M.S. degree)

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Start Date</th>
<th>End Date</th>
<th>Time to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Chandler, J</td>
<td>Aug. 2002</td>
<td>Aug. 2007</td>
<td>5 years</td>
</tr>
<tr>
<td>Chapman, P</td>
<td>Aug. 2005</td>
<td>Aug. 2007</td>
<td>2 years</td>
</tr>
<tr>
<td>Kington, J.</td>
<td>Aug. 2005</td>
<td>Aug. 2007</td>
<td>2 years</td>
</tr>
<tr>
<td>Ramirez, V.</td>
<td>Aug. 2005</td>
<td>Aug. 2007</td>
<td>2 years</td>
</tr>
<tr>
<td>*Rasbury, M.</td>
<td>Aug. 2001</td>
<td>Aug. 2007</td>
<td>6 years</td>
</tr>
<tr>
<td>Bailey, R.</td>
<td>Aug. 2003</td>
<td>Dec. 2007</td>
<td>4 years 4 months</td>
</tr>
<tr>
<td>Czechowskyj, R.</td>
<td>Aug. 2005</td>
<td>Dec. 2007</td>
<td>2 years 4 months</td>
</tr>
<tr>
<td>Stein, E.</td>
<td>Aug. 2001</td>
<td>Dec. 2007</td>
<td>6 years 4 months</td>
</tr>
<tr>
<td>Rincon, E.</td>
<td>Aug. 2003</td>
<td>May 2008</td>
<td>4 years 9 months</td>
</tr>
<tr>
<td>Wilson, C.</td>
<td>Aug. 2004</td>
<td>Aug. 2008</td>
<td>4 years</td>
</tr>
<tr>
<td>Towns, J.</td>
<td>Aug. 2003</td>
<td>Aug. 2008</td>
<td>5 years</td>
</tr>
<tr>
<td>Garcia, B.</td>
<td>Aug. 2003</td>
<td>Dec. 2008</td>
<td>5 years</td>
</tr>
<tr>
<td>Khanal, S.</td>
<td>Aug. 2007</td>
<td>Dec. 2009</td>
<td>2 years 4 months</td>
</tr>
<tr>
<td>Jones, C.</td>
<td>Jan. 2008</td>
<td>Aug. 2010</td>
<td>1 year 7 months</td>
</tr>
<tr>
<td>Aul, J.</td>
<td>Aug. 2006</td>
<td>Aug. 2010</td>
<td>4 years</td>
</tr>
<tr>
<td>Dhungana, R.</td>
<td>Jan. 2008</td>
<td>Dec. 2010</td>
<td>2 years 11 months</td>
</tr>
<tr>
<td>Ridgway, G.</td>
<td>Aug. 2007</td>
<td>Dec. 2010</td>
<td>3 years 4 months</td>
</tr>
<tr>
<td>Dickinson, H.</td>
<td>Aug. 2007</td>
<td>Dec. 2010</td>
<td>3 years 4 months</td>
</tr>
<tr>
<td>Parker, K.</td>
<td>Aug. 2006</td>
<td>Dec. 2010</td>
<td>4 years 4 months</td>
</tr>
<tr>
<td>Hansen, J.</td>
<td>Aug. 2008</td>
<td>May 2011</td>
<td>2 years 9 months</td>
</tr>
<tr>
<td>McKay, M.</td>
<td>Aug. 2009</td>
<td>Aug. 2011</td>
<td>2 years</td>
</tr>
<tr>
<td>Stone, J.</td>
<td>Aug. 2009</td>
<td>Aug. 2011</td>
<td>2 years</td>
</tr>
<tr>
<td>Platon, C.</td>
<td>Aug. 2008</td>
<td>Dec. 2011</td>
<td>3 years 4 months</td>
</tr>
</tbody>
</table>
M.S. Marine Science Geology: Our first student (Cobb) has not yet graduated. She started her program in Aug. 2009. She has applied to graduate this semester.

### 11. Graduate Employment

Indicate success of graduates in securing employment (or acceptance for additional graduate work) within and outside Alabama by attaching a list of graduates during the last 5 years and indicating where each was employed or went for additional graduate work.

#### Ph.D. Geology Graduate Employment

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Graduation Date</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peng, L</td>
<td>Aug. 2007</td>
<td>Arkansas Geological Survey</td>
</tr>
<tr>
<td>Liu, J</td>
<td>Aug. 2007</td>
<td>Postdoc, Peking University</td>
</tr>
<tr>
<td>Bordoloi, S</td>
<td>Dec. 2007</td>
<td>Conoco Philips</td>
</tr>
<tr>
<td>Yonggiang, Q</td>
<td>Dec. 2007</td>
<td>Beijing Water International, Ltd</td>
</tr>
<tr>
<td>Murgulet, D</td>
<td>Dec. 2009</td>
<td>Tenure track faculty, Texas A&amp;M</td>
</tr>
<tr>
<td>Bhattacharyya, S</td>
<td>May 2010</td>
<td>Technician, Univ. AL</td>
</tr>
<tr>
<td>Ebersole, S</td>
<td>May 2010</td>
<td>Geological Survey of Alabama</td>
</tr>
<tr>
<td>Murgulet, V</td>
<td>Aug. 2010</td>
<td>Faculty, Texas A&amp;M</td>
</tr>
<tr>
<td>Eayo, M</td>
<td>Aug. 2010</td>
<td>BP</td>
</tr>
<tr>
<td>Department:</td>
<td>Geological Sciences</td>
<td>Academic Year of Review:</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Bianchi, M</td>
<td>Dec. 2010</td>
<td>Postdoc, U. California Berkley</td>
</tr>
<tr>
<td>Lambert, J</td>
<td>Dec. 2010</td>
<td>Technician, Univ. AL</td>
</tr>
<tr>
<td>Hughes, K</td>
<td>Aug. 2011</td>
<td>ExxonMobil</td>
</tr>
<tr>
<td>Ghosh, J</td>
<td>Dec. 2011</td>
<td>Postdoc, Univ. AL</td>
</tr>
<tr>
<td>Cao. G</td>
<td>Dec. 2011</td>
<td>Postdoc, Peking University</td>
</tr>
</tbody>
</table>

**M.S. Geology Graduate Employment**

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Graduation Date</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Chandler, J</td>
<td>Aug. 2007</td>
<td>Chesapeake Energy</td>
</tr>
<tr>
<td>Chapman, P</td>
<td>Aug. 2007</td>
<td>Chesapeake Energy</td>
</tr>
<tr>
<td>Kington, J.</td>
<td>Aug. 2007</td>
<td>Ph.D. program, U. Wisconsin Madison</td>
</tr>
<tr>
<td>Ramizez, V.</td>
<td>Aug. 2007</td>
<td>eCopetrel</td>
</tr>
<tr>
<td>*Rasbury, M.</td>
<td>Aug. 2007</td>
<td>National Park Service</td>
</tr>
<tr>
<td>Bailey, R.</td>
<td>Dec. 2007</td>
<td>Anadarko Petroleum Corp.</td>
</tr>
<tr>
<td>Czechowskyj, R.</td>
<td>Dec. 2007</td>
<td>Hess</td>
</tr>
<tr>
<td>Rincon, E.</td>
<td>May 2008</td>
<td>Freestone Environmental</td>
</tr>
<tr>
<td>Wilson, C.</td>
<td>Aug. 2008</td>
<td>M.A. Special Ed., Univ. AL</td>
</tr>
<tr>
<td>Towns, J.</td>
<td>Aug. 2008</td>
<td>CH2MHILL</td>
</tr>
<tr>
<td>Garcia, B.</td>
<td>Dec. 2008</td>
<td>5 years</td>
</tr>
<tr>
<td>*Murgulet, D.</td>
<td>Dec. 2008</td>
<td>Ph.D. program, Univ. AL</td>
</tr>
<tr>
<td>Khanal, S.</td>
<td>Dec. 2009</td>
<td>Ph.D. program, Univ. AL</td>
</tr>
<tr>
<td>Jones, C.</td>
<td>Aug. 2010</td>
<td>American West Airlines</td>
</tr>
<tr>
<td>Rothfuss, J.</td>
<td>Aug. 2010</td>
<td>Chesapeake Energy</td>
</tr>
<tr>
<td>Dhungana, R.</td>
<td>Dec. 2010</td>
<td>Ph.D. program, Univ. AL</td>
</tr>
<tr>
<td>Ridgway, G.</td>
<td>Dec. 2010</td>
<td>Chesapeake Energy</td>
</tr>
<tr>
<td>Dickinson, H.</td>
<td>Dec. 2010</td>
<td>Ph.D. program, Purdue Univ.</td>
</tr>
<tr>
<td>Parker, K.</td>
<td>Dec. 2010</td>
<td>Instructor, Univ. AL</td>
</tr>
</tbody>
</table>
### 12. Employers’ Satisfaction with Graduates

Provide any objective or subjective information you have on employers’ satisfaction with graduates of your graduate degree program(s).

As demonstrated by the answer to question 11 above, our graduates have had tremendous success in securing employment in the geosciences. Of the 47 graduates listed above, only 3 are not actively employed in the geosciences. For two of these, this is by choice. For the third (a August 2012 graduate), she has only just commenced her job search. Though a large number of our graduates go into the oil industry, we have had success with placing Ph.D. graduates in academia. One of the Ph.D. graduates listed above has recently started a tenure track position at Texas A&M Corpus Christi. A number of other Ph.D. graduates have gone on to postdocs. In the last ten years two other Ph.D. graduates have gone on to tenure track positions. Both are now tenured.

Many of our students have opportunities to work closely with oil industry personnel during their studies. During meetings and workshops we have had tremendously good feedback corresponding to the quality of our students. For example, personnel from Schlumberger (a large oil field service company) have stated that our graduates are competitive with the best students in the country. Personnel from Marathon Oil have commented on the extremely good quality of our graduates.
13. Monitoring Academic Progress

Describe procedures for regularly monitoring academic progress of graduate students.

At the end of each semester the progress of each graduate student is evaluated relative to the timeline for the M.S. and Ph.D. programs (as given in the Graduate Handbook). Should students fall behind this timeline they receive an email to this effect from the Graduate Program Director. If this happens, they are required to have a committee meeting and have their committee endorse a plan of action to meet the departmental requirements. An example may be that an M.S. student has not defended their M.S. thesis proposal before the end of their second semester as required by the Graduate Handbook. If students are funded through a GTA, continued failure to show satisfactory academic program may result in a loss of funding.

14. Sources of External Funding

Indicate sources of external funding and dollar amounts for (a) research, (b) service or teaching contracts, and (c) training grants in the department.

The Department of Geological Sciences has historically received funding from the National Science Foundation (NSF), Department of Energy (DOE), National Aeronautics and Space Administration (NASA), various agencies of the State of Alabama (most recently the Geological Survey of Alabama and the Alabama Dept. of Environmental Management) and the oil industry (e.g. Murphy Oil). Details are given in the table below:

<table>
<thead>
<tr>
<th></th>
<th>FY 07</th>
<th>FY 08</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Funding</td>
<td>$559,464</td>
<td>$1,769,054</td>
<td>$915,987</td>
<td>$4,546,143</td>
<td>$812,924</td>
</tr>
<tr>
<td>Service Funding</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$34,656</td>
<td>0</td>
</tr>
</tbody>
</table>
15. National Research Council Ranking

If you have a doctoral program included in the National Research Council rankings of research-doctorate programs, describe what is being done to increase its standing.

For the 140 programs included in the Earth Sciences category in the 2011 NRC study, three rankings, 1) Research Activity of Faculty, 2) Student Support and Outcomes, and 3) Diversity of the Academic Environment were calculated. The national consensus among participating universities that has emerged is that to best place programs in some sort of realistic ranking the 5th-percentile ranking scores should be used to approximately position programs in percentile ranking format. For the Department of Geological Sciences this results in the table below:

<table>
<thead>
<tr>
<th>Ranking</th>
<th>5th-percentile ranking</th>
<th>Percentile (n=140)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Activity of Faculty</td>
<td>92</td>
<td>66</td>
</tr>
<tr>
<td>Student Support and Outcomes</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Diversity of the Academic Environment</td>
<td>79</td>
<td>56</td>
</tr>
</tbody>
</table>

The table clearly shows that the Department of Geological Sciences is a national leader in terms of Student Support and Outcomes. This is largely a result of strong institutional support for our graduate students, including a commitment to training and, for example, the provision of health insurance for all graduate assistants. We will continue to search for ways to improve this area. In terms of Research Activity of Faculty we clearly have much space for improvement. However, it should be pointed out that the detailed NRC assessment shows that no faculty members received a research grant in 2006. Data elsewhere in this report clearly show that this is in error. More recent data for the Department of Geological Sciences shows that we are doing very well in terms of grant activity. All new faculty members have been encouraged to take part in grant workshops and take advantage of institutional funds to visit, for example, NSF. This increased grant activity, and our record number of enrolled graduate students, will in time go a long way towards increasing our average per-faculty number of publications. Similarly to geoscience programs nationally, we are struggling with measures to increase diversity. One area that has
been problematic is the number of female faculty and graduate students. In the case of the former, 5 out of 14 (36%) of our faculty are female. This is up from 17% in 2006. Over the same period the percentage of female graduate students has increased from 25 to 30%. Compared to 2006, when we had no non-asian minority graduate students, we currently have 2 African-American students enrolled in our program. We will continue to try to encourage minority students to enroll in our program through the support of, for example, the McNair program and the use of Dean’s Diversity awards. We will also continue to pursue external funding opportunities to support students from underrepresented group. For example, recent efforts have been made to pursue funds through the Halliburton Foundation.

16. Financial Assistance

List the sources of financial assistance in the department, the number of graduate students currently supported by each source, and the type of assistantships available (teaching, research, other); also list current scholarships, fellowships, grants, contracts, etc.

Please be sure to include, by year for each of the last 5 years, the number of

- Graduate Council Fellowships
- National Alumni Association (license tag) Fellowships
- McNair Fellows
- SREB Fellows
- Future Faculty Fellows
- Total awarded to your students from the Graduate School’s Research and Travel Fund
- Any Fellowship Enhancement Program support since the program began in 2010-2011.

Number of students funded through GTAs and GRAs (separated by funding source) for the last 5 years (data taken from the fall semester for each year).

<table>
<thead>
<tr>
<th></th>
<th>1 year ago</th>
<th>2 years ago</th>
<th>3 years ago</th>
<th>4 years ago</th>
<th>5 years ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTA</td>
<td>23</td>
<td>20</td>
<td>19</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>GRA (NSF)</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>GRA (DOE)</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>GRA (industry funded)</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>GRA</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Number of students funded through other sources

<table>
<thead>
<tr>
<th>Source</th>
<th>1 year ago</th>
<th>2 years ago</th>
<th>3 years ago</th>
<th>4 years ago</th>
<th>5 years ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCF</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>NAA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>McNair</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SREB</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FFF</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RschTvI</td>
<td>$9,280</td>
<td>$7,500</td>
<td>$5,100</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>FEP</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Awarding Assistantships

Briefly describe the criteria and process for awarding assistantships. If there is a maximum time for a student to have an assistantship, please indicate.

To qualify for a Teaching or Research Assistantship new students must meet the minimum criteria for admission (cumulative GRE > 300 and GPA > 3.0). Letters of recommendation must be good, and the student must have satisfactorily articulated their research goals in their statement of purpose. An additional significant factor in the awarding of a GTA is the matching of the research goals of the prospective advisor with the applicant. This is of course a primary part of the decision to award a GRA. An incoming M.S. student who is awarded an assistantship is guaranteed funding for four semesters. An incoming Ph.D. student who is awarded an assistantship is guaranteed funding for 8 semesters. If a student is already in our program, to qualify for an assistantship they must be in good academic standing and be current on the departmental timeline for graduation (e.g. if they are an M.S. student they must have defended their thesis proposal in their 2nd semester).
18. Off-Campus and Distance Learning

If the department has any off-campus and/or distance learning graduate courses, describe staffing and procedures to assure that the quality of such courses is comparable to the quality of on-campus courses.

Due to the significant field and lab work involved in the geology curriculum we have only explored distance learning options in a very limited way. The many courses that have a significant off-campus component though the requirement for fieldwork are evaluated in the same way as all other classes. This is through standard university and departmental evaluations each semester.

19. Quality of Faculty Teaching

How and how often is the quality of faculty teaching of graduate courses evaluated in the department?

The quality of faculty teaching of graduate courses is evaluated each semester through standard university and departmental assessments.

20. GTA Training Coordinator

Who is the department’s designated GTA Training Coordinator? (SACS requires that all GTAs must have “direct supervision by a faculty member experienced in the teaching discipline.”)

The official departmental GTA coordinator is Andrew Goodliffe, the Graduate Program Director. Andrew Goodliffe is responsible for GTA assignments and serves as a point of contact for any issues that may arise with GTAs. GTAs in the Department of Geological Sciences are responsible for laboratory sections of classes. Each GTA is supervised directly by the faculty member teaching the lecture section of the class. The exception is GEO 101. The quantity of students enrolled and faculty involved in teaching this class dictates that there be a specific GTA supervisor for GEO 101. Delores Robinson serves in this role.
21. New GTAs

Does each new GTA receive:
(a) a letter of appointment that details the GTA’s duties?
(b) a previous syllabus for the course(s) to be taught?
(c) information concerning the department’s GTA Training Coordinator?
(d) a departmental orientation to being a GTA, in addition to the University’s Workshop for New Graduate Teaching Assistants?

All new GTAs receive a letter of appointment, previous syllabi, and are made aware of who their direct supervisor and the department GTA coordinator are. Attendance at a general departmental orientation is mandatory for all new students. During this orientation the role of a GTA, as well as expectations, are discussed. Additionally, GTAs attend an initial GTA meeting for each specific class to which they are assigned.

22. GTA Evaluation

Describe the SACS-required “planned and periodic evaluation” the department uses for assessing all GTAs. Also, indicate where copies of those periodic evaluations are maintained and for how long. Attach a template or a completed example, but redact information that identifies the particular student.

Each semester all GTAs are assessed in two ways:
1. Standard university assessment of teaching (provided online and on paper).
2. Departmental survey given to students.
The results of the departmental survey are typed out by our departmental secretary. Paper copies are archived. Digital copies are kept permanently on the secure A&S server where records exist back to at least 2004.

23. Regular GTA Training

Describe the SACS-required “regular in-service training” provided to assist GTAs in continuing to develop their teaching skills throughout their time serving as GTAs in the department.

Upon initial appointment as a GTA, all GTAs are required to take part in the two day GTA workshop offered by the Graduate School. All GTAs also meet weekly with their supervisor to discuss any issues that may have arisen while teaching. Delores Robinson and Andrew Goodliffe have taught annual workshops to Department of
Geological Sciences GTAs that have covered pedagogical methodology and learning styles. Andrew Goodliffe has experience leading national workshops on teaching pedagogy (e.g. http://serc.carleton.edu/NAGTWorkshops/earlycareer2012/index.html) and has made every attempt to pass much of this information on to our GTAs.

24. New GRAs

Does each new GRA receive:
(a) a letter of appointment that details the GRA’s duties?
(b) orientation as a GRA?

All new graduate assistants receive a letter of appointment. All new students are required to attend a departmental orientation that outlines expectations and departmental requirements. This is in addition to initial meetings with GRA advisors. GRAs are also required to attend any college and university training sessions pertaining to, for example, ethics issues.

25. Research by Graduate Faculty

Describe how the quality of research by graduate faculty is assessed, what rewards (in addition to merit increases and promotion/tenure) are provided as research incentives, and what is done to increase the quality/quantity of research for those not meeting expectations.

The quality of research by graduate faculty is assessed annually through the Faculty Activity Report (FAR). Faculty are required to submit evidence of research activity (e.g. papers published, presentations given, proposals submitted and funded). The FAR is reviewed by the department chair and the result discussed in a one-on-one meeting in the late spring. Opportunities for improvement are discussed. Pre-tenure faculty are reviewed annually and are provided written feedback at the departmental and college level.

Faculty who are exceeding expectations are considered for nomination for appropriate college and university awards.
26. System Collaboration

The chancellor and president are looking for opportunities for the three campuses of The University of Alabama System to work together more closely.

a.) What is the feasibility of offering one or more of your graduate degree programs with UAB and/or UAH?

Note. Working with other institutions on an existing degree program might take a number of forms, e.g., beginning to offer a long-standing UA program as a “cooperative” program with UA still the primary institution for program resources and administration. Alternatively, it could take the form of a “shared” program that is mutually sponsored by two or more institutions but would not be terminated if one of the institutions becomes unable to meet its obligations to the shared program.

b.) What are the opportunities for collaboration in research with UAB and/or UAH?

Neither UAB or UAH offer geoscience programs. One potential opportunity for collaboration is with the UAH Earth System Science program. This is a current topic of discussion.

The Department of Geological Sciences has a history of collaboration with UAB. Andrew Goodliffe, has worked closely with the UAB Department of Mechanical Engineering on the submission of a proposal to NSF for a Carbon Sequestration Center. Unfortunately this proposal was not successful. Paul Aharon is actively collaborating with John Christy from UAH on past hydroclimates in Alabama.
GRADUATE INFORMATION

ATTACHMENTS

1. Question 2 MS Outline
2. Question 2 PhD Outline
3. Question 22 GTA Evaluation Template
4. Student Satisfaction Survey Results (Graduate) for Geological Sciences
OUTLINE OF MASTER’S PROGRAM
(must submit 3 typed, signed copies to the Graduate School)

-Plan I: Minimum of 24 semester hours of graduate course credit and write a thesis
(a minimum of 6 semester hours of thesis research required).

-Plan II: Minimum of 30 semester hours of graduate credit.

-Foreign language/research skill (if required by the department)

-Time limits: All requirements for the master’s degree must be completed during the six years
(18 fall, spring, and summer semesters) immediately preceding the date on which the degree is to be awarded.

-Transfer of credit: up to one-half of required coursework for a graduate degree may be transferred from another
institution, with the approval of the department and the Graduate School. To initiate transfer of credit, complete a “Request for Transfer of Graduate Credit for Application to a Degree Program.”
The form is on the Web at http://graduate.ua.edu/forms/regtrans.pdf

-Residency: A student’s program at the master’s level must provide sufficient association with the resident faculty to
permit individual evaluation of the student’s capabilities and achievements.

Name ___________________________ Student Number ___________________________

Degree (e.g., M.A., M.S., M.F.A.) M.S. Major Geology - Hydrogeology

Foreign Language/Research Skill (if required by department) N/A

Previous Graduate Institutions and Degree(s) Awarded

Hardin-Simmons University - M.S. Environmental Management

Committee Members, If Known (may be appointed later):

Geoffrey Tick, Ph.D., Natasha Dimova, Ph.D., Chunmiao Zheng, Ph.D., Marlon Cook, M.S.

Note: The form for Admission to Candidacy for the Master’s Degree http://graduate.ua.edu/forms/applms.pdf
should be submitted to the Graduate School after completing 12 semester hours of course work.
## WORK COMPLETED

(Use [ ] to denote work completed at other institutions to be counted as transfer credit)

### MAJOR FIELD (minimum of 18 semester hours)
- GY 572 - Soil Science
- GEO 599 - Thesis Research
- GEO 607 - Intro Groundwater Modeling

### OTHER COURSES:

### FOREIGN LANGUAGE OR RESEARCH SKILL (if applicable):

### TO BE COMPLETED

- GEO 510 - Soil and Groundwater Restoration
- GEO 599 - Thesis Research
- GEO 570 - General Geochemistry
- GEO 5/6xx - Hydrogeology course TBD
- GEO 5/6xx - Hydrogeology course TBD
- GEO 5/6xx - Hydrogeology course TBD
- GEO 525 - Adv Topics in Geology
- GEO 535 - Graduate Seminar (2 semesters)

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**Student's Advisor**

**Date Filed**: 2/7/2012

**Distribution**:
- 1st Copy: Graduate School 102 Rose
- 2nd Copy: student
- 3rd Copy: student's major department

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GS 1001 - www
SIsenheimMastersProgOut.doc

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2012-2013 Program Review Page 157 of 242
OUTLINE OF Ph.D. PROGRAM (Plan of Study)

PART I: Requirements Summary

Course Credit:
Minimum of 48 semester hours of course credit (not to include dissertation research credit).

Dissertation Research Credit:
Minimum of 24 semester hours of dissertation research credit.

Foreign Language/Research skill:
If required by the department.

Time Limits:
All requirements for the doctoral degree must be completed within the seven-year period following admission to the doctoral program, with the following specific exceptions: psychology, modern languages and classics, and English (eight years if entering the doctoral program with a baccalaureate but no master's degree), and the doctor of public administration (eight years). Previous graduate credit may be applied to the doctoral degree if the credit was earned during the six-year period prior to admission to the doctoral program.

Transfer of credit:
Application required for approval by department and grad school (not to include dissertation research hours). Student completes "Request for Transfer Credit".

Residency:
The minimum period in which the doctoral degree can be earned is 3 full academic years of graduate study. The student must spend an academic year in continuous residence as a full-time student on-campus in the Graduate School of The University of Alabama (or, if specifically approved by the faculty concerned, one full summer consisting of two terms, preceded by or followed by one regular semester). This requirement can be satisfied only by enrolling in coursework; dissertation or thesis research cannot be used. GTAs or GRAs whose work assignment is more than 3 hours per semester should expect to spend more time than the minimum period in residence.

PART II: Student Information

Name: [Redacted]
CWO: [Redacted]

E-mail: [Redacted]

Major: Geological Sciences

PART III: Residency Requirements

Following the policy stated above, identify the consecutive full-time semesters in which you will fulfill the residency requirement, and list the courses you plan to take each of those semesters:

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2006</td>
<td>GEO 570</td>
</tr>
<tr>
<td>Fall 2006</td>
<td>GEO 571</td>
</tr>
<tr>
<td>Fall 2006</td>
<td>GEO 634</td>
</tr>
<tr>
<td>Fall 2006</td>
<td>GEO 635</td>
</tr>
<tr>
<td>Spring 2007</td>
<td>GEO 583</td>
</tr>
<tr>
<td>Spring 2007</td>
<td>GEO 634</td>
</tr>
<tr>
<td>Spring 2007</td>
<td>GEO 650</td>
</tr>
<tr>
<td>Spring 2007</td>
<td>GEO 648</td>
</tr>
</tbody>
</table>

PART IV: Current Status and Future Outline

NOTE: Do not include coursework courses on this form that are not required for the degree.

COURSES COMPLETED

COURSES TO BE COMPLETED

Department Chair or Graduate Director:

Date: 9/15/09

Graduate School Distribution: Grad School Student Student's Major Department

THE GRADUATE SCHOOL, 102 ROSE ADMIN BLDG, BOX 87011, TUSCALOOSA, AL 35487-0111, 205-348-5921, FAX 205-348-0400

2012-2013 Program Review Page 159 of 242
THE UNIVERSITY OF ALABAMA
Department of Geological Sciences
Instructor-Course Evaluation Form

Please answer questions 1-12 on the accompanying answer sheet, by filling in the bubble/circle that best represents your answer.

1 = Very Poor  2 = Poor  3 = Satisfactory  4 = Very Good  5 = Excellent

• If a particular question is irrelevant to this course, do not answer that question.

Instructor:
1. Instructor’s knowledge of the subject matter.

2. Instructor’s ability to use examples and illustrations that clarify a topic.

3. Instructor’s ability to inspire interest in the subject.

4. Instructor’s ability to direct students to appropriate resources for information.

Course:
5. Organization of the lectures.

6. Overall organization of the course.

7. Clarity of exam questions.

8. Timing of feedback on student performance.

9. Contribution to your knowledge.

Text:
10. Organization of the text.

11. Readability of the text.

12. Content of the text.

Please answer questions 13-15 on this sheet.

13. What were the strong aspects of this course?

14. What were the weak aspects of this course?

15. How can the course be improved?
THE UNIVERSITY OF ALABAMA
Department of Geological Sciences
Laboratory Evaluation Form

1 = Very Poor    2 = Poor    3 = Satisfactory    4 = Very Good    5 = Excellent

• If a particular question is irrelevant to this course, do not answer that question.

Instructor
1. Is the instructor knowledgeable in the subject?
2. Is the instructor prepared for lectures?
3. Does the instructor encourage students to ask questions, disagree, etc?
4. Does the instructor present the material clearly?
5. Does instructor inspire interest in the subject?
6. Is the instructor available for outside consultation when needed?
7. Considering everything, how would you rate the lab instructor as a teacher compared with all other college lab instructors that you have had?

Lab
8. Are the objectives of the lab clear?
9. Is the correlation between the lab and lecture obvious?
10. Do the lab exercises help you to better understand the material presented in lectures?
11. Does the lab contribute a significant amount to what you learned in the course overall?
12. Relate the level of the lab to the level of the course (1 = lab is too advanced; 3 = lab level is appropriate; 5 = lab is too basic)
13. How do you rate the materials and equipment in the lab?
14. Is the amount of work required in the lab appropriate?
15. Are the tests and quizzes appropriate for the material covered in lab?
16. Considering everything, how would you rate this lab compared with all other college labs that you have taken?

Manual and Lab Exercises
17. Does the lab manual help you in learning the required material?
18. Do the lab exercises help you to better understand material presented in the lectures?

Please answer questions 19-21 on this sheet. You may continue on the other side of the paper.
19. What were the strong aspects of this lab?
20. What were the weak aspects of this lab?
21. How can the lab be improved?
GRADUATE STUDENT SATISFACTION SURVEY RESULTS
Spring 2012
DEPARTMENT OF GEOLOGICAL SCIENCES

Question 3: What degree are you pursuing?
N = 17

Percent
0.0 MA
64.7 MS
35.3 PHD
0.0 EDD
0.0 EDS
0.0 Other

Question 4: What do you like best about your major program, i.e., what are its strengths?
N = 13

1 Bring in many outside guest lecturers for additional exposure to industry and other academics.
2 My advisor and committee is great, and they really make this program fun for me.
3 Student funding, accessibility of technology and expensive analytical instruments, nationally-respected faculty
4 Range of classes and research facilities
5 The faculty are very willing to work with you to figure out what classes you are lacking and help create a time line for studies.
6 Class size, smaller department, plenty of support staff, plenty of opportunities for research and travel funding.
7 Responsiveness of faculty to student needs and concerns, accessibility of faculty and willingness to find funding and other forms of aid.
8 Young faculty that might someday change the department.
9 The classes offered are well-rounded. The professors all study different areas of geology and that keeps classes interesting.
10 Open door policy
11 My advisor, opportunities for funding to conduct research/attend conferences
12 A faculty with a wide-range of expertise/disciplines. Access to a number of analytical instruments. Decent access to software/high functioning computers, as well as printing facilities.
13 Flexible work hours, freedom of schedule, laid back faculty (mostly)- makes for a good bond/learning environment for students. Hard working graduate students that enjoy socialization as well. Good teachers all around (professors care about student progress in learning); excellent funding for grads; facilities are great;
Question 5: What do you like least about your major program, i.e., what are its weaknesses?
N = 14

1. Enrollment times are unclear and can rarely enroll without the help of main office staff.
2. Not nearly enough classes offered for the number of faculty employed in the department. My concentration has 3 faculty, but is only offering 1 class this fall that all of us have already taken, leaving us with nothing to sign up for related to what we study. Most of this problem likely stems from the faculty having to teach so many Geo 101/102 sections, due to it counting as the science credit for most degrees at UA.
3. Departmental politics, too many mandatory/compulsory/required activities, too much emphasis on students giving talks.
4. Not enough classes offered, a lot of time constraints between classes.
5. Some aspects of the marine science program in geology were not laid out and so much of it was by guess.
7. No one is in a hurry. Not enough classes to choose from.
8. Few faculty in the “traditional” mold - i.e. few sedimentologists and structural geologists with a strong, central field component to their research.
9. Lack of faculty accountability. Lack of IT resources.
10. Difficult to get done on time.
11. Students never graduate on time. Often, advisors/professors are too busy to guide their students properly. Some of them will continue to push more research on their students instead of keeping to the scope of the student's original project.
12. Much of the faculty do not make it possible for their masters students to graduate in four semesters. There also seems to be a lot of animosity between faculty members. Also, the classes that are available do not match the list of classes from the website.
13. Politics in the department - non-transparencies. I hate the graduate student cubicle room.
14. Some groups lack rigor in research initiative. Weekly seminars are not taken seriously by faculty. Some lack of interest/support from faculty for Master's research - can you blame them? All in all- Standards are not set high enough for level of scientific rigor in research groups (some).
15. International students cannot speak English well enough to give an understandable presentation about their research.
**Question 6: Advising and Practical Experiences.**

Please circle the response that corresponds to your opinion about each item.

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>The overall quality of your major is</td>
<td>17</td>
<td>17.6</td>
<td>64.7</td>
<td>17.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>The quality of practical experiences (Practicum, Laboratory, Internship, Clinical Experience, or Field Experience) in your major is</td>
<td>16</td>
<td>18.8</td>
<td>56.3</td>
<td>25.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>The quality of courses as preparation for employment after graduation in your major is</td>
<td>17</td>
<td>0.0</td>
<td>52.9</td>
<td>23.5</td>
<td>23.5</td>
<td>0.0</td>
</tr>
<tr>
<td>The quality of academic advising in your major is</td>
<td>17</td>
<td>29.4</td>
<td>35.3</td>
<td>23.5</td>
<td>11.8</td>
<td>0.0</td>
</tr>
<tr>
<td>The quality of career advising in your major is</td>
<td>17</td>
<td>11.8</td>
<td>29.4</td>
<td>29.4</td>
<td>29.4</td>
<td>0.0</td>
</tr>
<tr>
<td>If you attended the workshop, the quality of the university-wide workshop for new GTAs is</td>
<td>16</td>
<td>6.3</td>
<td>31.3</td>
<td>18.8</td>
<td>12.5</td>
<td>31.3</td>
</tr>
<tr>
<td>If you were/are a GTA, the quality of departmental efforts to help you develop and improve your teaching skills as a GTA is</td>
<td>17</td>
<td>5.9</td>
<td>11.8</td>
<td>17.6</td>
<td>35.3</td>
<td>29.4</td>
</tr>
<tr>
<td>If you were/are a graduate assistant, the quality of your experiences as a graduate assistant is</td>
<td>17</td>
<td>11.8</td>
<td>35.3</td>
<td>17.6</td>
<td>5.9</td>
<td>29.4</td>
</tr>
</tbody>
</table>
Please identify the nature of any of your concerns regarding instruction, courses, or advising. If you have any suggestions for improvement, please include them. 

N = 7

5 The help from GTA in charge of my section was lacking in instruction as well as structure. Much of it I had to take care of myself as a new GTA in the course.

10 If the professor decides what my grade will be at the beginning of the semester, why bother? Most of my classroom instruction was out-dated and useless.

12 The courses are varied, but the only career counseling in the department is geared toward the oil industry. There is absolutely no career help for students studying hydrogeology, paleontology, geochemistry, or biogeochemistry. I was told when I entered the program that students are equally divided between those who wanted oil industry careers and those who wanted to environmental careers. There are very frequent visitors to the department from oil companies and none from any other area of the geosciences.

13 The department could make PhD students teach 101 classes so that faculty are available to teach more grad level classes. The same classes are always taught. I think it would benefit the students if some faculty members would step outside of their comfort zone to offer a bigger variety of classes.

15 With respect to GTA training - there is no inner-department training on how to develop labs, improve classroom skills, or integrate technology into the classroom. I have a feeling professors think this unworthy of their time, but communicating science is a skill, and one that everyone should constantly work on...including some of the professors. As a solution, they could invite someone from a different (education) department to run a workshop for graduates.

16 There are no enough courses about my academic studying

17 Most faculty spend plenty of time preparing lectures or incorporating interesting group projects into the curriculum. Some professors recycle old, outdated material. Grads should be held to a higher esteem and thrown into the deep end with challenging projects that actually accomplish goals. We are through with lectures and tests. Our time would be better spent addressing a problem in the scientific literature as a group and attempting to conduct original research as a group. The professor should be the conductor/task delegator and the students the workers who also contribute their ideas to the problem.
### Question 7: Personnel, Courses, and Instruction.

Please circle the response that corresponds to your opinion about each item.

<table>
<thead>
<tr>
<th>Printed information (e.g., catalog, brochures) about your major program is useful.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>82.4</td>
<td>11.8</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>You have a professor in your major who serves as your &quot;mentor.&quot;</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>82.4</td>
<td>11.8</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Faculty in the department feel that academic and/or professional interaction with other students is an important part of your program.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>88.2</td>
<td>11.8</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The department offers about the right number of combined undergraduate/graduate courses.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>58.8</td>
<td>35.3</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The sequencing of courses in your major program is appropriate.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>52.9</td>
<td>23.5</td>
<td>23.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Departmental faculty members are professionally competent.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>76.5</td>
<td>23.5</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Courses in your major program are offered frequently enough so that you can complete your degree requirements as planned.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>58.8</td>
<td>35.3</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>You receive instruction in the current research methods used in your major field.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>76.5</td>
<td>17.6</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>You receive a sufficient amount of practical training for your major field.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>64.7</td>
<td>35.3</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Most staff members in your departmental office are helpful.</th>
<th>N</th>
<th>Agree</th>
<th>Disagree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>
Please identify the nature of any of your concerns regarding personnel, courses, or instruction. If you have any suggestions for improvement, please include them.

N = 6

3 Need more training/internship opportunities for careers other than those for economic geology or carbon sequestration
4 Some courses need to be offered more often.
9 For computer intensive courses, more time needs to be devoted to operation of unfamiliar programs.
10 Jim Donahoe sleeps at his desk and the grad students rarely have a working printer because of it.
12 There are a couple of professors who behave extremely inappropriately. They belittle, bully, curse, manipulate, and intimidate students. If students even hint at trying to stand up for themselves, they are threatened with retaliation. My suggestions for improvement? Get rid of tenure so these so-called professionals have to worry about keeping their jobs like the rest of the world. I don’t know what else to suggest because in the normal world, they would be fired. In Academia, they get to stay and continue to make students (and other faculty members) miserable.
17 Everyone is very helpful, but many students complain about having to figure everything out for themselves, that’s what grad school is all about- figure it out for your self. And it is a good thing we are require to do that- it builds independence and confidence.
Question 8: Assistance, Involvement, and Research.

Please circle the response that corresponds to your opinion about each item.

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
<th>N</th>
<th>Frequently</th>
<th>Occasionally</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you conduct or assist in a research project in your major?</td>
<td></td>
<td>16</td>
<td>81.3</td>
<td>18.8</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>How often do you assist faculty or staff in your major in providing service to the community or state?</td>
<td></td>
<td>16</td>
<td>6.3</td>
<td>31.3</td>
<td>31.3</td>
<td>31.3</td>
</tr>
<tr>
<td>How often are professors in your program available to help you outside of class?</td>
<td></td>
<td>16</td>
<td>62.5</td>
<td>31.3</td>
<td>6.3</td>
<td>0.0</td>
</tr>
<tr>
<td>How often are you unable to enroll in a required course in your major because all sections are filled?</td>
<td></td>
<td>16</td>
<td>6.3</td>
<td>0.0</td>
<td>18.8</td>
<td>75.0</td>
</tr>
<tr>
<td>How often are you unable to consult with your program advisor when necessary?</td>
<td></td>
<td>16</td>
<td>31.3</td>
<td>18.8</td>
<td>31.3</td>
<td>18.8</td>
</tr>
<tr>
<td>How often do faculty encourage graduate students to participate in professional organizations associated with your major program?</td>
<td></td>
<td>16</td>
<td>50.0</td>
<td>31.3</td>
<td>18.8</td>
<td>0.0</td>
</tr>
<tr>
<td>How often does at least one faculty member in your major express a special interest in your progress?</td>
<td></td>
<td>16</td>
<td>50.0</td>
<td>31.3</td>
<td>18.8</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Please identify the nature of any of your concerns regarding assistance, involvement, and research. If you have any suggestions for improvement, please include them.
N = 7

3 Most of the faculty have to attend too many departmental meetings/functions, making it more difficult to schedule student-faculty meetings.
5 Major advisor being the only undergraduate advisor makes it hard to get in to discuss research. Involvement at the state and local level depends upon the research which mine did not at the time.
10 It is surprising that this Jack-ass parade has not yet resulted in lawsuits and/or injury.
12 I know professors are busy, but they need to be more available to help students. My advisor is available occasionally and ignores most of my emails. They seem to be constantly busy doing everything but helping me when I need it. I have only felt like one professor has been genuinely interested in my progress in the program...and it isn't my advisor.
13 Many of the faculty members are too busy with the college of arts and sciences or outside committees to spend time in the lab researching or showing the students how to use equipment and help to analyze results.
15 There is little to no structure in assisting students with professional development. Student organizations have been the only driving force with respect to this topic, and that can be hit or miss, and purely dependent on student motivation at the time. Again, running some workshops for graduates on a variety of career tracks (academia, industry, etc) would be very helpful. Also having a semester gathering with our graduate coordinator to keep students on track and respond to student concerns in a group setting would be helpful.
17 Faculty vary. Some are VERY involved in the research projects of their students. Some are less involved. I have heard a student complain that his/her second year in the program, his/her advisor didn't even know exactly what he/she was doing in research. That may be the student's fault for not taking enough initiative to have lengthy meetings with the advisor, but the advisor often cut meetings short (5-15 minutes) or even blow them off. -- this is where that professionalism thing comes in.
**Question 9: Facilities**

Please circle the response that corresponds to your opinion about each item.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>More than Adequate</th>
<th>Percent Inadequate</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>The non-computer laboratory facilities for courses in your major are</td>
<td>17</td>
<td>35.3</td>
<td>58.8</td>
<td>5.9</td>
</tr>
<tr>
<td>The departmental computer facilities for courses in your major are</td>
<td>17</td>
<td>52.9</td>
<td>41.2</td>
<td>5.9</td>
</tr>
<tr>
<td>The library holdings for your major are</td>
<td>17</td>
<td>29.4</td>
<td>52.9</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Please identify the nature of any of your concerns regarding facilities. If you have any suggestions for improvement, please include them.

N = 6

2. *We have a well-furnished computer lab setup that will run nearly any program - but the modeling program we work with, which is MODFLOW.*

5. *I did not use the library holdings for my major.*

10. *We have printers that rarely work and most of the programs seem to be pirated.*

11. *Need better printers.*

12. *No major concerns. The facilities are adequate because I was able to conduct my research, but the labs are old. The counters are wearing out and there is rust on the metallic surfaces. It could use some updates.*

15. *How are technologies being improved in our department? I'm not sure at all - I have not seen many changes. Huge department priority should be to HIRE AN ACTUAL IT TECH!!!!!!!!!*
The following items pertain to faculty and enrollment.

Please select the response that corresponds to your opinion about each item.

**Question 10:** With how many faculty members in your department have you developed a close professional relationship, such that you could ask them for a letter of recommendation?

N = 17

<table>
<thead>
<tr>
<th>Percent</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>None</td>
</tr>
<tr>
<td>0.0</td>
<td>One</td>
</tr>
<tr>
<td>76.5</td>
<td>Two</td>
</tr>
<tr>
<td>23.5</td>
<td>Three or more</td>
</tr>
</tbody>
</table>

**Question 11:** What do you think about the size of the graduate classes in your department?

N = 17

<table>
<thead>
<tr>
<th>Percent</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.9</td>
<td>Many are too small</td>
</tr>
<tr>
<td>94.1</td>
<td>Most are about right</td>
</tr>
<tr>
<td>0.0</td>
<td>Many are too large</td>
</tr>
</tbody>
</table>

**Question 12:** If you had to do it again, would you choose this major?

N = 17

<table>
<thead>
<tr>
<th>Percent</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>58.8</td>
<td>Definitely</td>
</tr>
<tr>
<td>17.6</td>
<td>Probably</td>
</tr>
<tr>
<td>11.8</td>
<td>Probably not</td>
</tr>
<tr>
<td>11.8</td>
<td>Definitely not</td>
</tr>
</tbody>
</table>
Please identify the nature of any of your concerns regarding faculty and enrollment. If you have any suggestions for improvement, please include them.

\[ N = 5 \]

3. The emphasis of this geology department on geochemistry/petroleum exploration/hydrogeology does not fit well with my intended career path.

5. The department is small yet it allows the students to become close to each other.

10. I was offered an MS/GTA position at UNC. I should have accepted it.

12. I have developed close relationships with some of the newer faculty members. The older faculty members are the ones I mentioned in previous comments. Some of the older faculty are extremely difficult people and I don't feel close to them. There are several new students every year, but few students graduating. I don't see students ever graduating from this program on time. I heard of one student who had to hire a lawyer just so he could graduate.

15. From a student perspective: There are a lot of interpersonal issues with our faculty - a few in terms of professionalism with students, and maybe even each other. There appears to be a growing divide between less and more experienced faculty - no change/change. Students do feel the symptoms of this tension and disorganization. Stronger leadership maybe needed; potentially even supervision from outside of the department at times, may be necessary (the last thing a professor wants to hear....). Many of the faculty seem distant from the student body, and do not take the time to interact or build many professional relationships with students (they do of course, with their lab groups, etc). Again, most of the functions that allow for interactions outside of the classroom are nearly all student driven. Some faculty participate in these events; others you rarely see. I guess this is all summarize as: our department has a vague sense of community.
The following items pertain to assistantships.

Please select the response that corresponds to your opinion about each item.

**Question 14:** How clear is the process for obtaining a graduate assistantship in your program?
N = 17

<table>
<thead>
<tr>
<th>Percent</th>
<th>47.1</th>
<th>Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>41.2</td>
<td></td>
<td>Somewhat confusing</td>
</tr>
<tr>
<td>5.9</td>
<td></td>
<td>Very confusing</td>
</tr>
<tr>
<td>5.9</td>
<td></td>
<td>I never tried to obtain an assistantship</td>
</tr>
</tbody>
</table>

**Question 15:** How many opportunities are there for obtaining graduate assistantships (teaching, research, other) in your program?
N = 17

<table>
<thead>
<tr>
<th>Percent</th>
<th>52.9</th>
<th>Many</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.3</td>
<td></td>
<td>Some</td>
</tr>
<tr>
<td>5.9</td>
<td></td>
<td>Few</td>
</tr>
<tr>
<td>0.0</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>5.9</td>
<td></td>
<td>I never tried to obtain one</td>
</tr>
</tbody>
</table>

**Question 16:** How would you rate the quality of the assistance available for obtaining graduate assistantships?
N = 176

<table>
<thead>
<tr>
<th>Percent</th>
<th>17.6</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>58.8</td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>17.6</td>
<td></td>
<td>Fair</td>
</tr>
<tr>
<td>0.0</td>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>0.0</td>
<td></td>
<td>No assistance is available</td>
</tr>
<tr>
<td>5.9</td>
<td></td>
<td>I never tried to obtain one</td>
</tr>
</tbody>
</table>

**Question 17:** How clearly were your duties as a graduate teaching or research assistant explained to you in a letter of appointment?
N = 17

<table>
<thead>
<tr>
<th>Percent</th>
<th>47.1</th>
<th>Very clearly</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.4</td>
<td></td>
<td>Fairly clearly, but I still had a number of questions</td>
</tr>
<tr>
<td>11.8</td>
<td></td>
<td>The letter was vague in describing my duties</td>
</tr>
<tr>
<td>0.0</td>
<td></td>
<td>I did not receive an appointment letter</td>
</tr>
<tr>
<td>11.8</td>
<td></td>
<td>I have never had a graduate assistantship</td>
</tr>
</tbody>
</table>
Please identify the nature of any of your concerns regarding assistantships. If you have any suggestions for improvement, please include them.

N = 5

3 Students need to know that if they transfer credits in from their M.S. degree it may adversely affect their eligibility for GTAs.

9 Outside funding sources should be financially beneficial to the students who are awarded scholarships and grants and not subtracted from TA funding for a financially neutral situation.

10 Why do Geo-101 TA’s have to teach and proctor so much more than virtually every other TA in the country?

12 There are not enough assistantships available to graduate students. The department admits too many students at a time, which forces competition with the students who need support to finish their degree. They should admit only as many students as they can support throughout the program and more importantly, the older students should be given priority over the new students.

15 A previous TA for my lab had to explain everything about the lab to me - the professor did not. I think my letter of appointment only stated the lab I would be teaching for the semester, and potentially the salary I would be receiving. Instruction, though, is so detailed that I would expect most of the information to come from a former TA, which is fine.
CONSULTANT REPORT
1. Overall Assessment

Overall Assessment of the Department and its Degree Programs—Current Regional/National Standing and Promise for the Future

The department is well regarded regionally and has the very achievable goal of becoming more nationally prominent. Students at all levels are generally good and appear highly motivated and involved in the department. The faculty is very productive as a group, and unlike many departments, no clear underperformer is present on the faculty. Their average publication rate is over 2 papers per year, and a high percentage of these papers are in the top journals.

Research funding is generally good, but the faculty needs to look more outside the walls of their facility to forge innovative collaborations in order to increase funding levels. The energy industry appears to be an underexplored source of funding, and the new NOAA water center should be a real opportunity for the department.

Space is a contentious issue in the department because there is a strong need for more space while, at the same time, the existing distribution of space is not perceived to be equitable. Both aspects of the space shortage may be affecting the retention and recruitment of new faculty.

The department is reeling from the loss of three strong Assistant Professors in the past three years. Thus, the faculty is much too small given the programs that exist and the student demand for course offerings, and this situation is adversely affecting the students and the remaining young faculty. Obviously, the young professors who have left the department need to be replaced to bring the department up to full strength relative to a few years ago. This step is crucial to the department's meeting its teaching commitments at all levels and to making progress toward its ambitious long-term research aspirations.

Geochemical instrumentation in the department is impressive, and much of it is a resource outside the department. However, much of it is also nearing the end of its useful life, so
replacement and upgrades are stressed in the department’s strategic plan. The execution of this plan should consider both the needs of new faculty and the eventual retirement of several senior faculty members. Also, more technical support is needed for the maintenance and operation of geochemical instrumentation, geophysical equipment, and computer facilities within the department.

Some Comments Concerning the Curriculum

The curriculum for the BS and MS programs is typical, which is desirable since employers and graduate schools expect a relatively standard series of courses in math, physics, chemistry, and the geological sciences. However, the PhD program seems heavy on required courses.

My discussions with the undergraduate students revealed that a shortage of upper division electives is a real problem for them. This situation seems clearly due to the shortage of faculty. Similarly, my visit with the graduate students revealed a need for more graduate level class offerings. The undergraduates also expressed a need for a bigger selection of “writing classes.” I do not fully understand what is involved in designating an offering as a “writing class,” but the lack of them is causing problems for the students. In addition, both graduate and undergraduate students felt a need for a quantitative analysis/geostatistics class.

2. Departmental Assessment Activities

Please read the assessment attachments to the General Information form (Form 2) and the analysis and recommendations by the Assistant to the Provost for Assessment. Offer any additional thoughts on the department’s assessment activities from your perspective as someone highly experienced in the same discipline as that of the department.

The department’s vision of becoming one of the top 40 U.S. geoscience departments at a public university by the fall semester of 2018 is ambitious but laudable. Their strategic plan is well reasoned, and the level of detail indicates that it is the result of considerable thought and discussion within the faculty. The reality appears to be that not all of the goals can be obtained given the resources that are likely to be available over the next five years, so the challenge will be to learn from the review process and adjust their goals and priorities accordingly with help of the university administration.
3. Promotion and Tenure

Brief evaluation of the department’s tenure and promotion guidelines.

The department’s promotion and tenure procedures and expectations are spelled out effectively in their document and are typical for a large state university. As long as they are followed, and my impression is that they are, things are in good order in this area.

4. Strengths

Strengths of the Department and its Degree Programs (in rank order).

The department has a strong faculty at all levels. The support staff is small, but appears to very dedicated and effective. Some strong Post-Docs are also present.

The student body appears to be bright, energetic, and involved in departmental activities. They clearly want to learn and have a number of good ideas about how to enhance their learning experience.

The space and facilities the department occupies in the Bevill Building are of good quality, but research space is quite limited for most faculty members and several student labs are small and very crowded.

The faculty, students, and staff all clearly want to see the department move forward as described in their assessment document.

5. Areas of Opportunity

Areas of Opportunity for the Department and its Degree Programs (in rank order).

1. There is an opportunity for more interactions with the energy industry, and reinvigorating the Basin Research Center would be one way to take a step in this direction. The department is the most prominent one in the region encompassed by the Gulf of Mexico, Atlanta, the Mississippi River, and southern Tennessee, and this region contains
considerable energy resources and many related facilities. Such a center could bring numerous groups around the University together under a broad umbrella.

2. The new NOAA Water Center that is on the horizon also appears to present a major new opportunity. The research interests of several of the faculty include water-related studies, and geochemical and geophysical instrumentation and expertise in the department should be assets to this center. There is presently some ambivalence about this center apparently due to a lack of information, but the department needs to take the initiative to assert itself in order to assure that it is perceived as a player.

3. Forging better ties with the Alabama Geological Survey is one way to take advantage of both of the above opportunities.

4. One faculty member is extremely involved in China and hopefully more opportunities for other faculty and students to be involved will develop. Chinese scientists I know are anxious to work with colleagues in the U. S., but introductions to the right people in China are hard to arrange without the help of a colleague in the U.S.

5. Facilitating upper-level undergraduates and first-year M.S. students’ ability to take the same class offering (slash listing) would help both student populations and reduce some of the teaching load pressure on the faculty.

6. With the exception of the graduate student computer lab, the computer facilities appear good. However, it is unclear if full use of college-level computer support is occurring. It is also unclear if the level of connectivity from off-campus and perhaps within the department is what it could be.

6. Recommendations

Recommendations to Improve the Department and its Degree Programs (in rank order).

A. Low- or No-Cost (in rank order)

1. Make a strong commitment to taking steps that focus on working collaboratively with the new NOAA Water Research Center and the Alabama Geological Survey. A good collaborative environment is present on the campus, and several faculty members are taking advantage of this opportunity. However, the specific steps above are examples of opportunities to take advantage of this environment.

2. It is clear that the department needs more research and teaching space. Furthermore, existing space needs to be more equitably shared as part of a space expansion plan. For example, it appears that the very crowded optics lab could easily be expanded, and this should be considered. The same situation applies to the computer lab for graduate students.
3. It appears that Full Professors need to mentor and nurture the Assistant Professors more and to exercise more leadership for the department to advance and fulfill many of its strategic goals. For example, large sections (260 seats) of introductory geology classes should not be assigned to Assistant Professors until at least their second year. In addition, the stopgap practice of 3-year, non-tenure track appointments should be avoided if at all possible.

4. I appreciate that this is being done to some extent at this time. However, M. S. students should be strongly encouraged from the beginning to present their thesis in the form of a paper basically ready for submission. PhD students should ideally have some portion of their research already published or at least submitted before their dissertation defense. In any case, their dissertation should be prepared in chapters which are each prepared as a paper that is ready for submission. This approach helps the students get off to a fast start in their careers, helps the faculty member(s) who have advised and supported the research and are presumably coauthors of the papers, and helps the department with its visibility and scientific impact.

5. There is a need to develop flexible systems so that students have better access to “writing classes” and electives that both upper-division and beginning graduate students can jointly access. One such class could be quantitative analysis/geo-statistics. Also, the formal course requirements for PhD students should be revisited.

6. An active faculty travels often, and today’s environment requires that students have a broad view of the geological sciences. Presently, some students feel reluctant to seek faculty input from anyone other than their direct advisor. Some steps should be taken to relieve this impression so students can benefit from broad faculty input.

B. Requiring New Funds or Allocating New Funds (in rank order)

1. Move quickly to replace the young faculty members who have recently left the department. In order to have the maximum impact on teaching and research, a strategic plan needs to be thought through for these hires. For example, I recommend that the department consider a cluster hire to revive the Basin Research Center. This move would be attractive to the energy industry, and their support could be substantial if they are brought into the process at an early stage. Such a center should have a broad reach that would include the new faculty who are badly needed as well as other groups on campus, especially the Alabama Geological Survey. It would also be relevant to the NOAA Water Research Center.

2. Start-up funds for Assistant Professors should be more comparable to those in other science departments in the college. However, given the constraints on space and funding and programmatic imbalances, the department should consider a plan for new hires focused on broadening its programs in areas where large labs and very expensive equipment are not required.

3. It is clear that the department needs more research and teaching space. However, existing space needs to be more equitably shared as part of a space expansion plan. For
example, it appears that the very crowded optics lab could easily be expanded, and this should be considered. The same situation applies to the computer lab for graduate students. Then, existing space that is scheduled to become available in the Bevill Building can hopefully be allocated to the department and modified in a cost-effective way.
COMMITTEE REPORT
Committee Report - Geological Sciences

ACADEMIC PROGRAM REVIEW

1. Program Description

Goals

State major goals for the department, as gleaned from its Strategic Plan, assessment activities and reports, completed program review forms, and other available information.

Curriculum

Give a brief description of emphasis in course offerings such as lower division vs. upper division; master’s vs. doctoral; and nature of curriculum in terms of theoretical vs. applied, research vs. service, etc. Include a brief summary of how curriculum assessment is accomplished in the department, how often, and what modifications the department has documented as being made in the most recent revision(s) of the curriculum.

Teaching/Research/Service Mix

Describe relative emphasis among activities in the department.

1.1. Goals (State major goals for the department)

The stated major goals of the department are:

- To provide the highest quality education to students at the undergraduate and graduate level
- To provide academic and outreach programs that benefit its students, the scientific community, and society
- To achieve excellence in the scientific study of all aspects of geosciences
- To provide service to the scientific community and the public, and to assist in the sound and sustainable economic development of the region, state and nation

1.2 Curriculum (Give a brief description of emphasis in course offerings)

The Department offers four, 100-level introductory courses and proposes to offer an additional four introductory courses; eight courses required of majors; and seven elective courses in each of three tracks (Energy, Environment, and General Geology). With two
overlaps, this yields a total of 19 elective courses. In addition, they list 10 elective courses that are offered “on demand.” Graduate course are organized into three main research foci (similar to the undergraduate tracks – Environmental, Tectonics, Energy and Mineral) and total ~25 courses.

Each time a new catalog is being made (this used to be every two years, now it is each year), the Department discusses what changes are needed in their curriculum in regular faculty meetings, typically a few months in advance of the catalog deadlines. This is not a formalized process. A report from the undergraduate director is part of the agenda for all faculty meetings and curriculum review is addressed within this portion of faculty meetings. Most of the time only small changes are made.

The undergraduate curriculum committee can also undertake annual revision of the curriculum. Potential changes are discussed and the committee recommendations are brought to the full faculty for discussion and vote.

The greatest changes in the last decade are those proposed in the 2012-2013 5-Year Plan. This review was a major agenda item during the most recent faculty retreat and several faculty meetings. The process was driven from collective observation of student performance over the past several years and data from assessment reports. The Department identified goals and has proposed major curriculum changes to address these goals. Changes range from new required major’s courses to developing specialized tracks in upper level classes. The proposed curriculum was compared to curricula of respected peer geology programs, with particular emphasis undergraduates, upon completion of the program, would meet nationwide expectations.

1.3 Teaching/Research/Service Mix (Describe relative emphasis among activities)

The relative emphasis appears comparable to science departments and reflective of typical 40/40/20 faculty appointments.
2. Description of the Program Review Process

Briefly describe committee membership, documents and information reviewed, interviews conducted, and any other relevant factors in the process.

2.1. Committee membership.

Dr. Robert H. Findlay (chair), Bishop Professor, Department of Biological Sciences (http://bsc.ua.edu/about/faculty-directory/robert-findlay/)
Dr. Tim A. Haskew, Department Head, Department of Electrical and Computer Engineering (http://haskew.eng.ua.edu/)
Dr. Douglas J. Sherman, Professor and Chair, The Department of Geography (http://geography.ua.edu/people/faculty/Sherman.php)

2.2. Documents and information reviewed.

On September 17, 2012 the committee received the Department of Geological Sciences Program Review Dossier – the requisite departmental self-study document. On December 18, 2012 the committee received the Department of Geological Sciences vision statement and on 12/19/2012 we received an excel file with the research space allocated to individual faculty members and the breakdown of total grant dollars awarded to faculty over the past 5 years.

2.3. Interviews conducted.

On September 13, 2012 the Committee met with Dr. John F. Schmitt, Associate Graduate Dean and Assistant to the Exec. VP & Provost for an initial orientation meeting. Also in attendance were Dr. Robert F. Olin, Dean of the College of Arts and Sciences, Dr. Luoheng Han, Associate Dean, Natural Sciences and Mathematics, Ibrahim Çemen, Professor and Chair, Department of Geological Sciences, Andrew M. Goodliffe, Associate Professor and Graduate Coordinator (at that time), and C. Fred T. Andrus, Associate Professor and Undergraduate Coordinator.

In collaboration, the Department and the Committee set the following interview schedule, which was followed with one exception due to unexpected travel:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Interviewee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 18</td>
<td>9 AM</td>
<td>Department Chair</td>
</tr>
<tr>
<td></td>
<td>3 PM</td>
<td>Provost (Unable to attend, Dr. Joe Benson filled in)</td>
</tr>
</tbody>
</table>
Oct 25 9 AM VP for Research  
10 AM Dean, Graduate School  

Oct 29 11 AM Outside consultant  

Nov 1 10:30 AM Assistant Professors  

Nov 2 8 AM: Associate Professors  

Nov 8 9 AM Full Professors  
10 AM Post Docs  
10:30 AM Research Staff  

Nov. 12 Noon Geological Sciences Advisory Board  

Nov. 15 9 AM Graduate students, Masters  
10 AM Graduate students PhD  

Nov. 29 9 AM: Undergraduate students  
10 AM Office staff  

Dec. 6 9 AM Undergraduate and Graduate Program Coordinators  
10 AM Department Chair  

2.4. Any other relevant factors in the process  

None noted  

3. Program Evaluation  

Quality  

Discuss things such as number of faculty, their assignments, qualifications, productivity, and other indicators of quality. Discuss quality of students as may be indicated by admissions scores, GPA, student recognition, acceptance to graduate schools, success in graduate programs, or career achievements of graduates. Additional items for discussion may include grade distribution in courses; physical facilities, space and other resources.
available; computer access; library holdings, etc. You also may include information related to program recognition such as accreditation, state/regional/national competitions, unique comparative advantages of programs, etc. Information from sources such as student performance on licensure/certification examinations, external examiner reports, student satisfaction surveys, exit interviews, or follow-up studies also may be included. Not all of these items must be addressed; they are examples.

Distinguishing Characteristics of the Department and its Programs

This is a brief discussion and should not duplicate what is included in the section on Quality. The committee may wish to discuss semester credit hour production, number of majors, number of degrees awarded at various levels, or any other measures that the committee feels distinguish the department and its programs. You might include discussion of past trends and future projections, as well as factors affecting enrollment, such as career opportunities. If relevant, discuss any specific relationships with business, industry, government, etc., as well as program relationships with other departments within the University or with other institutions of higher education.

Departmental Assessment Activities

The committee is asked to read the assessment attachments to the General Information form (Form 2) and the analysis and recommendations by the Assistant to the Provost for Assessment. Offer any additional thoughts on the department’s assessment activities from your perspectives as experienced faculty from disciplines outside the department under review.

Tenure and Promotion Guidelines

Provide a brief evaluation of the department’s tenure and promotion guidelines.

Quality

3.1 Quality

3.1.1. Faculty and Research. On September 17, 2012, the Department listed 13 tenure and tenure-track faculty members (4 assistant professors, 4 associate professors, 4 full professors and the department chair - also a full professor, fully research active and carrying a 1-1 teaching load). In addition, Dr. Joe Benson, then Vice President for Research (currently interim Provost and Vice President for Research) holds a tenured appointment within the department. There is one instructor and one non-tenure track, visiting assistant professor. One full professor currently holds a half-time appointment (Dr. Chunmiao Zheng) and during the review process an associate professor (Dr. Andrew Goodliffe) was appointed half-time to
the Graduate School. All faculty hold PhDs and all are active in research and mentoring undergraduate and graduate researchers. Two active searches (one tenure-track - igneous petrology/volcanology, one three-year, non-tenure track, visiting assistant professor – geophysics) were ongoing at the time of program review.

Permanent, full-time faculty carry a 2-1 (or 1-2) teaching load. However, there is significant variation in this policy. The Undergraduate and Graduate advisors, and the Geo 101 coordinator are given a 1-1 teaching load. The Loper Chair (Dr. Paul Aharon) also appears to hold a 1-1 teaching appointment. The alterations of the teaching loads for the two faculty that currently hold half-time appointments were not articulated. The Department plans to implement a policy allowing for a 1-1 teaching load for any faculty with >$250,000 y-1 in research funding. Actual courses taught by the combined tenure-track/tenured faculty (last 4 academic years) indicate that the Department teaches, on average, 2.25 courses above load (for example, a combined load of 32 courses with 34 being taught in an academic year).

The Department does not break teaching effort into major and service course teaching, as its 100-level courses (or at least 101 and 102) are required for Geology majors. In Fall 2011 the Department provided 4,814 and 315 credit hours of undergraduate and graduate instruction, respectively. Given that there were 76 undergraduate majors and assuming an average enrollment of 15 semester hours per major, ~ 75% of the undergraduate teaching effort is directed toward service courses. From Fall 2009 to Fall 2011, there was a 7.5% increase in undergraduate teaching effort. However, more striking is the increase over the last decade. From Fall 2001 to Fall 2011 student credit hours increased from 2,230 to 4,814 or a 116% increase. This occurred with an increase of about 18% in the size of the faculty (11 to 13). It is noteworthy that the size of the faculty was 13 in 1996 and that the Action Plan from the 2002-2003 Program Review called for the faculty to increase to 15 by 2006. The number of majors increased by 8.6% from 2009 to 2011 and this well exceeds the target of 60 put forth in the 2002-2003 Action Plan. It is clear from the increases in majors and faculty comments during interviews that the Department has followed the recommendation (#6; 2002-2003 Action Plan) to use Geo 10X courses to recruit undergraduate majors. The dramatic increases in student enrollments and failure to achieve Action Plan required faculty size is straining departmental resources, and in particular, the allocation of faculty effort. The external reviewer noted “the faculty is much too small given the programs that exist and the student demand for course offerings.”

The Department followed the recommendation (#9; 2002-2003 Action Plan) to appoint a single undergraduate advisor (currently Dr. Fred Andrus). Given the workload of meeting with over 70 students each semester, it is appropriate that this appointment include a reduction in teaching load. Undergraduate students felt that advising is a strength of the Department. In addition, these students commented on the general approachability and openness of the faculty, as well as the direct involvement of most faculty with the overall
educational activities of the undergraduates.

The Committee concurs with the outside reviewer’s opinion that the department is well regarded regionally and has the very achievable goal of becoming more nationally prominent. The Committee agrees with the outside reviewer that the faculty is productive, averaging over 2.1 peer-reviewed publications a year (2007-2012 totals, divided by 5.5 for all faculty arriving on or before 2007; for faculty appointed after 2007, count begins at appointment and divisor is decreased to reflect years of service). However, the Committee notes a wide range in productivity within the faculty (0.5 – 6.4 papers y-1). The average publications per faculty per year is comparable to the rate from 2000.

For FY 07-11, the Department averaged $1,727,646 in extramural awards and has ranked between 2nd and 5th among College of Arts and Sciences academic departments. Assuming an average of 12 faculty for this period, the average per capita annual award is ~$144,000. This is ~ 80% of the per capita award rate for Biological Sciences, which typically ranks 1st or 2nd among College of Arts and Sciences academic departments in total annual extramural awards. The annual average is considerably reduced from the 2001-2002 value ($6,596,640) reported in the 2002-2003 Program Review but this decrease reflects, for the most part, the retirement of Dr. Ernest Mancini who accounted for $4,563,397 of the annual total in 2001-2002. We agree with the outsider reviewer’s opinion that the level of research funding is generally good, and that the faculty should seek innovative collaborations in order to increase funding levels. The energy industry appears to be an underexplored source of funding, and the new NOAA National Water Center should be a real opportunity for the department. The number of extramural grants received (again 2007-2012) averaged 1.2 y-1 with some disparity between senior and junior faculty. Two senior faculty did not list any extramural funding in their CVs. Excluding these two faculty members and a non-tenure track, visiting assistant professor who joined the faculty in 2012, the number of extramural awards per faculty ranges from 0.7 to 3.3 y-1.

The Committee strongly agrees with the outside reviewer’s opinion that “space is a contentious issue in the department because there is a strong need for more space while, at the same time, the existing distribution of space is not perceived to be equitable”. Space allocations range from 433 to 2,181 sq ft per faculty member. Using data provided by the Department Chair on the current space distribution (sq ft per faculty) and extramural funding ($ individual y-1), we found no statistical dependence of space allocation on research activity ($^2 = 0.05$). However, a simple scoring of faculty rank (Assistant Professor = 1, Associate Professor = 2 and Full Professor = 3) produced a strong relationship ($^2 = 0.55$) between space allocation and faculty rank.

Our tour of the department provided anecdotal evidence that supports the perception of
inequality. All assistant professors have ~450 sq ft of space. We visited one such laboratory while the professor and two students were working and there was barely room for the review team to enter. This faculty member advises additional graduate students and it is difficult to imagine six or more individuals working within the laboratory simultaneously. A second PI requires a refrigerator and -80°C freezer as standard equipment for research, and there is insufficient floor space in the lab to accommodate either. This contrasts with one room that we visited where it appeared to be used only to store seldom-used equipment, and several other labs that showed little to no signs of activity. Several of the multiuser rooms also contribute to this perception. The complex of rooms entered through Bevill 2017 is spacious and underutilized. This contrasts with the stable isotope facility, which has two large mass spectrometers packed into one small space. In addition, faculty vary in the type of space needed – some require analytical chemistry space while others require space for computer workstations. Several faculty expressed the opinion that they were forced into the “wrong” type of space. It is the Committee’s opinion that this issue is an impediment to the growth of this department and has the potential for substantial negative consequences if allowed to continue, especially with regard to the demoralization of junior faculty.

3.1.2 Undergraduate Programs. The Department offers three degrees in geology (B.A., B.S., B.S. in Geology (B.S.G.)) and participates in the Marine Science program offering a B.S. in Marine Science/Geology. The B.A. is the least scripted with a requirement for 30 hours, few required courses, and no ancillary courses. It requires the completion of a minor. The B.S. requires 36 semester hours of geology, has 4 required 300-400 level courses, and requires 12 hours of chemistry, 8 hours of physics and mathematics through applied differential equations. The B.S.G. is the most scripted degree requiring 45 semester hours of geology. It has 6 required 300-400 level courses and requires 8 hours of chemistry, physics and mathematics.

The Committee agrees with the outside reviewer’s assessment that “students at all levels are generally good and appear highly motivated and involved in the department.” As noted above, there have been moderate increases in teaching effort and number of majors (7.5% and 8.6%, respectively) from 2009 to 2011, with dramatic increases (116% and 124%) occurring over the past decade. Student quality, as indicated by ACT and GPA, has shown a slight increase or remained constant from 2009 to 2011 (ACT – 23.76 to 24.03; GPA constant at 2.75). Student quality has risen over the past decade (2001-2011; ACT - 23.0 – 24.03; GPA - 2.69 – 2.75). Percentages of each letter grade for upper level course were quite variable over time. For example the percentage of students earning an A ranged from a low of 13.2% (Fall 2010) to a high of 29.4% (Spring 2009). This variability is likely caused, in part, by small numbers (86-127 enrolled students) and by the courses offered. The average number of students earning either an A or A- for the six semesters reported was 25.6%; this is significantly higher than the average of 20.1% reported in the 2002-2003 program review. It is difficult to assess whether there has been grade inflation as a result of the change from the 5 letter grade
system to the +/- grading system. It does suggest that student performance has increased with increasing student quality and that the degree of student achievement has not decreased with rising class size.

Seven of 42 (16.7%) graduating seniors (2010 and 2011) completed the Departmental survey. While it is difficult to draw any strong conclusions with the small return, the survey results were positive. For example, 85.7% and 14.3% of respondents rated the overall quality of their education as excellent or good, respectively. Approximately 15 undergraduate students met with the Committee and in general offered high praise for the Department. They counted among the Department’s strengths its small size, the advising system, the ease of accessing professors, the ability for undergraduates to do research and the high expectations that faculty held for student performance while wanting the students to succeed. They found the field geology course to be integrative. They also noted the high activity level of the student organization. One issue that the survey did reveal was that the growth of the University and the increase in Geology’s undergraduate program is now causing scheduling problems as 14.3% and 42.9% of respondents reported frequently or occasionally being unable to enroll in required courses because sections were full. This perception was confirmed during our meeting with undergraduate students, as chief among their concerns were internal and external scheduling problems (conflicts among meeting times for required courses and infrequently offered electives, and conflicts between Geology courses and required ancillary courses). Also noted were a lack of writing courses, the lack of labs for geochemistry and geophysics courses, and that some courses were overcrowded (optical mineralogy, structural geology, sedimentology). The Committee found that the department was on the verge of having to offer multiple laboratory sections for its required major courses to accommodate increasing enrollment and this change will place additional strain on faculty and graduate teaching assistants. Dr. Fred Andrus, Undergraduate Coordinator reported that 16 to 17 undergraduates enrolled in GEO 399 (the departments main undergraduate research course).

3.1.3. Graduate Program. The Department offers two graduate degrees in geology (M.S. and Ph.D. in Geology) and participates in the Marine Science program offering a M.S. in Marine Science/Geology. Degree requirements follow along tradition Graduate School lines with both M.S. degrees focusing on the Plan I Masters. Total graduate enrollment increased 25% from 2009 to 2011, with all of the increase occurring in the Masters program; the department also enrolled its first M.S. in Marine Science/Geology student in 2010. The graduate program has seen a 56.5% increase in Masters enrollment over the past decade while enrollment in the Ph.D. program has increase by one student. Student GRE scores were not reported in the 2002-2003 program review so an assessment of long-term changes in student quality was not possible. Ph.D. placement is good with at least two recent graduates in tenure-track faculty positions and others employed as researchers (post doctoral and technicians), with industry and government. Placement data were given for 33 M.S. graduates and showed excellent...
placement (all but one - a August 2012 graduate – placed) with graduates employed or enrolled in a Ph.D. program. Employment ranged from research to governmental to industrial (mainly energy or environmental). Time-to-degree-data were provided and were fair to excellent. Masters degrees were completed in an average of 3 years 3 months with a median of 2 years 9 months, indicating that some Masters students languished in the program, thus raising the overall average. Time to Ph.D. completion was an excellent 5.5 years with very little difference between the mean and median time to degree. The department awarded 1, 8 and 7 M.S, and 3, 4 and 3 Ph.D. degrees in 2009, 2010 and 2011, respectively. The number of degrees awarded is exemplary for a department of this size.

The past five years have shown a large increase in the number of students supported as GTAs, as would be expected given the greater than 2-fold decadal increase in undergraduate semester hours generated by the department. This increase, coupled with a modest 18% increase in faculty size, has pushed the number of graduate students mentored per faculty member to 4.43; of the top 39 U.S. News and World Report ranked earth science departments, only the University of Texas (Austin) approached this ratio (4.19). As a group, the top departments averaged 2.26 graduate students mentor per faculty member. For the Department to reach its goal of obtaining a top-40 ranking, faculty numbers will need to increase so that the number of graduate students mentored per faculty member can be brought more in line with national averages.

The Committee met with separately with M.S. and Ph.D. students and both groups had high praise for the department. Strengths of the Department articulated by both groups included:
• the quality of the faculty plus their approachability/willingness to help students
• the variety of research opportunities afforded students
• the excellent travel funding available for research presentations and/or attendance of short courses.

In addition, the M.S. students mentioned the helpfulness and competence of the office staff, the usefulness of the M.S. proposal defense and the uniqueness of the well log analysis course. The Ph.D. students cited the strength of the AAPG student organization, the high level of support for professional development and the ready access to computing facilities.

Several students and faculty would like to have more 600-level courses offered but with expanding teaching loads this would be difficult without additional faculty.

3.1.4 Support, Infrastructure and Administration. The Department’s offices, faculty laboratories and teaching labs are contained within the Bevill Building, although much of its lecture space is housed in Smith Hall. The new priority system of assigning teaching facilities is causing concern among faculty members as many bring a large number of materials (rocks and fossils) to lecture and transport across campus is difficult.
Undergraduate and graduate computer laboratories appear well equipped with both modern hardware and software, although several graduate students noted that the number of “floating” licenses is too low during periods of peak activity. Teaching laboratories also appeared well equipped but as noted above are now too small to handle increased course enrollments in single sections.

There are several major, shared research instruments but they are apparently nearing the end of their useful lifetime with no plan for replacement. This is not only a Department problem, but one that is common across the College and University. The need to replace multi-user equipment every 7 to 10 years is a reality that is commonly ignored. On a positive note, there are three, full-time professional staff who are charged with operating and maintaining the existing equipment. They appear to be competent and dedicated to their tasks, and no performance issues were raised in this regard during our review.

As detailed above, space is a critical infrastructure need of the Department. Not only is the potential for future growth significantly hampered by a general lack of space and its current distribution, but it appears that productivity also suffers.

Virtually all faculty commented on the lack of University support for the Department in terms of funding for faculty startups, particularly with regard to attracting quality hires in “expensive” research areas (most commonly noted were geochemistry and geophysics). The College’s and University’s reluctance to provide necessary equipment for junior faculty via startup packages forces these individuals to equip their laboratories using extramural funds which delays the achievement of the productivity required for tenure.

Kaminski and Geisler (2012) writing in *Science* state “When a faculty member leaves prematurely, [U.S. universities] suffer disruptions in teaching and mentoring as well as significant economic losses. Start-up costs in engineering and natural sciences can range from $110,000 to nearly $1.5 million, and it may take up to 10 years to recoup this investment.” They also report that retention rates for Associate and Full Professors have ranged for 90-92% for the last several decades and that rates are lower (84-86%) for Assistant Professors. Using an overall retention rate of 90%, it can be predicted that a faculty of 13 will lose, on average, 1.3 faculty per year. This anticipatable loss must be factored into any plans to grow a department. Just to maintain a faculty of 13, it can be expected that the Department will have to add 6 new faculty members in the next five years. Years in which science departments are unable to hire faculty are a hardship on all departments (regardless of size) but are particularly devastating to small departments such as Geological Sciences. The use of Three-Year Non-Tenure Track Visiting Assistant Professor positions seems particularly short-sighted. While the job advertisement lists “teach introductory geology courses and undergraduate and graduate courses in geophysics, advise graduate students, and enhance the department’s externally funded research program in geophysics,” it not clear how the
hire will accomplish anything other than the teaching goals. The faculty member will not be in residence long enough to mentor graduate students (a critical departmental need) nor (typically) to acquire substantial extramural funding (a significant University goal for the Department).

The office staff is commonly viewed as a strength of the Department and as being friendly, helpful and competent. The Department Chair is personally liked by the majority of the faculty and viewed as an asset to the Department but there was a consistent desire among faculty and staff for greater communication and a more straightforward approach toward dealing with some of the Department’s challenges. However, this is not strictly a Departmental problem as there are several (and maybe numerous) examples of personnel decisions with strong Departmental consequences being made with little to no input from the Department Chair. There was no formal faculty-mentoring program within the Department and the Committee feels that tenure-track faculty would benefit by such a program.

**Distinguishing Characteristics of the Department and its Programs**

The geology program at the University of Alabama was established in 1847, and the Department historically aided the State of Alabama in the development of its geological and hydrological resources. With the development of the University of Alabama to a comprehensive research university, the Department expanded its research activities to the entire range of geological science and all corners of the globe. Financial support for these activities has been provided by the National Science Foundation, the U.S. Department of Energy, the U.S. Department of Defense, the U.S. Environmental Protection Agency, the Petroleum Research Fund of the American Chemical Society, the National Oceanic and Atmospheric Administration, the Gas Research Institute, the Gulf Coast Hazardous Substance Research Center, and numerous mining and petroleum companies. The Department is committed to the teaching scholar model of academic excellence with a laudable range of teaching, research and teaching goals.

In terms of teaching, research and service, Geological Sciences is a strong department because of its faculty. The Committee fully agrees with the outside consultant’s assessment of recent faculty losses. “The department is reeling from the loss of three strong Assistant Professors in the past three years. Thus, the faculty is much too small given the programs that exist and the student demand for course offerings, and this situation is adversely affecting the students and the remaining young faculty. Obviously, the young professors who have left the department need to be replaced to bring the department up to full strength relative to a few years ago. This step is crucial to the department’s meeting its teaching commitments at all levels and to making progress toward its ambitious long-term research aspirations.” The quality of recent tenure-track appointments indicates a bright future for the Department with
significant gains in productivity and quality, if the current retention difficulties can be overcome. The committee urges the faculty, Chair, College and University administration to dedicate themselves to growing this department and providing the necessary resources, including appropriate startup packages, to do so.

In the past decade the Department has more than doubled its student credit hour production and has increased by 50% the number of graduate student trained, while the number of faculty members has increased by only 18%. This growth in student education without the corresponding growth in departmental resources straining both physical and human resources and evinces the need for more human, financial and material resources.

The Geological Sciences Advisory Board (GSAB) was founded in 2002 and includes alumni, corporate, governmental and community members. The GSAB supports students, faculty and staff in the Department of Geological Sciences at The University of Alabama. The Board also serves as a liaison with the business community and government in order to promote the interests of the Department within The University of Alabama, the state and nation. A primary goal is to help recruit and retain talented, competent, motivated students and faculty. This is accomplished by providing scholarships, employment opportunities for students and support to retain talented faculty. To date (2011), the GSAB has raised and awarded $80,000 in scholarships that have supported 25 geology students. The GSAB has endowed two scholarship funds valued at $1.045 million in current and pledged gifts. This group is excellent Departmental resource that could, if willing, provide non-binding comment on curriculum revisions as they relate to business community and government.

Departmental Assessment Activities

The report Attachment 2, Detailed Assessment Report 2011-2012 DGS contains statements lifted wholesale from the 2002-2003 Program Review. Many of these statements cannot be further from the truth. For example “The undergraduate enrollment could double without increasing the departmental teach [sic] load substantially or detracting from program quality (i.e. while maintaining course sizes of less than 20 students per section). It is disturbing that none of the undergraduate students availed themselves of the opportunity to meet with either the review committee or the external reviewer. Furthermore, less than 10% of the undergraduate student responded to the OIR student satisfaction survey (rendering the results of the survey useless). These facts may be indicative of an apathy among the students - that they do no [sic] consider themselves active participants in departmental activities. Although course sizes are relatively small, the program is unable to offer the number of course deem end [sic] required to permit a full range of courses (at both the graduate and undergraduate level) to cover all of the degrees offered.” It is unclear why such outdated information is contained within the document. In addition Attachment 2 is presented in such an arcane format and is so riddled with jargon (including unexplained abbreviations) it is
unreadable to the average faculty member. We have chosen to disregard, largely, this report.

**Tenure and Promotion Guidelines**

The Committee agrees with the outside reviewer’s opinion “The department’s promotion and tenure procedures and expectations are spelled out effectively in their document and are typical for a large state university”. There is every indication that the tenure process within the department is conducted in accordance with the document.

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**4. Strengths**

Strengths of the department and its degree programs (numbered list in rank order).

1) The faculty. The Assistant and Associate Professors are a cohesive, collegial and interactive group. All faculty members appear willing to do whatever is necessary for the department to succeed (for example, some are teaching courses in excess of load simply because the students need the courses). All are publishing and have active research awards. Seven have averaged 2 or more publications per year for the past 5 years. All appear to be successfully mentoring graduate students.

2) The students. Undergraduate, M.S. and Ph.D. students appeared bright, ready to learn, and involved in departmental activities. They arrive with strong credentials and upon completion of their desired degree have excellent placement rates within the profession.

3) The support staff. While the support staff, both administrative and technical, is small, it is dedicated and effective.

4) Geological Sciences Advisory Board. This volunteer board, originally founded to support students, faculty and staff of the Department is providing much needed scholarship funding. They are currently funding several scholarships that allow the department to recruit incoming freshman.

5) Vision and goals. The Department envisions itself as maintaining it breadth, necessary for effect student education, while becoming a premier integrated geoscience program specializing in Energy Sustainability and Environmental Impacts. The emphasis on these two
areas addresses the world’s compelling needs in the 21st century – energy security and environmental sustainability.

6) The space and facilities the department occupies in the Bevill Building are of good quality (although limiting in several ways – see below).

5. Areas of Opportunity

Areas of opportunity for the department and its degree programs (numbered list in rank order).

1a. Increase faculty number. Among the Departments goal is an increase in the tenure-track research faculty size to total of 21 teaching scholars by Fall 2018. While it is clear that the faculty size must increase, it is not clear that the goal of 21 faculty members by 2018 is possible. Assuming the current search is successful, the faculty will stand at 14 in Fall 2013. Assuming the retirement of all eligible faculty (beginning service to the University on or before 1993 and/or born 1953) the Department will lose and need to replace 4 faculty on or before Fall 2018 to hold staffing at 14. Growth to 21 will require an additional 7 faculty for a total of 11 hires in 5 years. The committee recommends the hire of two additional faculty members per year, to start Fall 2014, 2015, 2016, 2017 and 2018. Such growth will require significant increases in research facilities and substantial investment on the part of the College and University.

1b. Focus hiring priorities. We encourage the Department to revisit the hiring strategy included in the most recent 5-year plan. The current prioritization looks like a menu rather than a coherent plan to establish recognized fields of strength. The latter is especially important in the context of creating identities for the graduate program as an aid to both recruitment and placement. The Department is, and will be (within the 5-year horizon), too small to be everything to everyone. We point toward the desire to hire a glaciologist as one example of potentially misplaced emphasis. If the teaching of courses considered by the Department as essential fall outside of this plan, we recommend either searching for good researchers with a breath of teaching abilities [list courses to be taught directly in the ad] or the use of one or more CLTF positions to maintain the required breath without diluting the effort to achieve a coherent plan to establish recognized fields of strength.

2a. Significant increases in research infrastructure. It is clear that the Department faces space issues on a variety of fronts including too little space, researchers saddled with
non-optimal space, and perceived inequities in space distribution. Clearly 450 sq ft is too small a research space for any geoscientist conducting “wet” research; e.g., any work that requires sample processing such as solvent extractions, acidifications, etc. Similarly, such a laboratory size is too small for any analytical instrumentation-based research where gas chromatographs, mass spectrometers, etc. are required. The Department should set some minimum space requirements for these types of research laboratories (~1,000 sq ft) and provide this, if appropriate, for all new hires and obtain this space for current faculty. It appears that some of the non-optimal space issue could be solved with laboratory switching, although such switches in an atmosphere of limited resource can be problematic. The College and/or University (it is not clear which controls space in Bevill) should provide the required resources to accommodate the above. The Department must develop a mechanism to effectively address the perceived space inequities. This may include recognition of space minimums, recognition that these minimums may differ among subdisciplines and research approaches, a mechanism for partitioning multiuser space among faculty members assigned space, a mechanism for identifying “underutilized” space and general acknowledgement on the part of each faculty member that group success is best achieved when limited resources are perceived as fluid. If the Department cannot achieve the aforementioned mechanism, it may fall to the College to address this area of opportunity. We recommend that as a part of the effort under 1b. that the department include projected space needs for each hire. For example, sub disciplines that are highly computational may only need a projected increase in 500 sq ft of space, while others with large sample processing and analytical needs may require substantially more.

2b. Significant increases in research infrastructure. It is clear that a number of hires in the past decade have suffered from a lack of appropriate startup funds. As stated above, it appears that the University has failed to plan for the impact of student growth on the demand for faculty startup funds, this is not a Department specific problem, rather it is likely a common difficulty faced by science and engineering departments. Several faculty members reported that $125K was considered by the upper administration as the maximum that any geoscientist would need in startup. This statement would not be made for a chemist and the understanding that this level of support is inadequate for a geochemist needs to be developed. The College and University need to fund each of the sub-disciplines within the Department at an appropriate and competitive rate. The Department must work to find creative solutions to acquiring faculty in critical sub-disciplines that are viewed as “too expensive” for the University of Alabama. There may also be a role for the GSAB in developing resources for additional startup support. We recommend that as a part of the effort under 1b. that the department include projected startup costs for each hire. For example, sub disciplines that are highly computational may only require $125,000, while other with large sample processing and analytical needs may require substantially larger startups.
3. Curriculum. The Department has grown to the point where a 2-year teaching plan is necessary. All should understand that this is a plan (not a contract) and that sometimes a plan changes. That said, this has a great number of advantages. These include:

- Students can plan for courses that are offered once every two years
- Faculty can plan a teaching rotation while tenure-track faculty can be protected from excess preparation of new courses (current Associate Professors report preparing 4, 4, 5 and 3 new courses during their tenure run).
- Critical teaching needs can be identified in advance
- It aids in sabbatical planning
- It aids in avoiding course scheduling conflicts (i.e. teaching two required laboratories at the same time, scheduling a required Geology course at the same time as a required Chemistry course, etc.)

Several faculty members are teaching above load. These include Dr. Andrew Goodliffe who taught 11 courses between Fall 2009 and Spring 2012 when load was 6 and Dr. Harold Stowell who taught 13, including the required Geo 495 – Field Geology during summer 1, when load was 7.5. Teaching loads should be stabilized and all required or needed courses taught within load prior to the planned expansion of the curriculum. The potential impacts of reduced teaching loads for faculty members with more than $250k in research funding per year need to be articulated. In particular, this reduction in course load may be an issue better addressed through course ‘buy-out’ rather than straight teaching release.

4. Communication. Throughout the Department, information needs to flow more readily among and between the chair, office staff, tenured and untenured faculty, professional staff, graduate students and undergraduate students.

6. Recommendations

Recommendations to Improve the Department and its Degree Programs (numbered list in rank order).

The Committee wishes to recognize the recommendations made by the outsider reviewer. While his comments cannot be considered effusive, we endorse his findings and recommendations. The Committee has analyzed the 2002-2003 Program review document and has found that the department has made a good faith effort to meet or exceed all of the recommendations contained within. Two unmet recommendations
stand out: a) Committee recommendations to strengthen the program – Low-cost or No-Cost: 1. Fill vacant faculty positions [page 8 – this recommendation did not make it into the action plan]; b) Action Items: Funding Increases or Allocations 1. Add new faculty lines in the Department [page 29]. In 1996 the Department had 13 faculty members, decreased to 11 faculty by 2001, and in the past dozen years it had grown back to 13 faculty. **In 17 years there has been no net increase in faculty number.** The committee cannot help but wonder how great the strides would have been if all parties involved with the 2002-2003 action plan had achieved the goal of 16 Geological Sciences faculty by 2006. As noted above, growth requires simultaneous replacement of un-retained/retiring faculty, in addition to the addition of new faculty lines.

**6A – Low to no-cost.**

1. Eliminate the use of the three-year non-tenure track visiting assistant professor. The probability of hires meeting the stated objectives of the position is extremely low. The positions do not solve any of the Department’s critical needs, except for increased teaching (and there are other, established methods to do that). These positions are potentially exploitative of the individuals filling them.

2. Develop a mechanism to effectively and equitably address the perceived space inequalities.

3. Develop a more focused 5-year plan in terms of replacing key faculty with respect to teaching critical courses coupled with a rank ordering of targeted hires in focused research areas. Some sub-disciplines may need to be either strengthened or eliminated.

4. Increase research activity. The Chair, in consultation with the faculty should set some minimum level of research productivity. Faculty that fall below this level should increase their contributions to Departments goals in other ways, most likely via increased teaching loads. Running three-year averages are usually appropriate as many faculty have uneven productivity when viewed annually (i.e., two grants awarded one year with none the next; 1 paper one year, 4 the next, etc.).

5. Improve long-term planning by holding annual faculty retreats utilizing venues that help the faculty maintain focus (e.g. Bryant conference center, Moundville Archeological Park). Allow sufficient time between drafts and any resulting products for faculty input.

6. Establish a once-per-semester, Chair-graduate student meeting. The Chair can plan and invite all graduate students to the meeting thus providing a forum for graduate students.

7. Establish within the Department Graduate Handbook clear guidelines for the process whereby a graduate student may change supervisors and for faculty members wishing to
dismiss graduate students from their laboratories.

8. Explore the costs and benefits of teaching GEO 495 Field Geology within load. As a field course, it needs to be taught during the summer (which does generate extra income for faculty). However, as a required course it should be reflected within faculty teaching effort. Students clearly identified this course as critical to their development as geologists, thus this course should be protected at all costs.

9. Reduce tensions among the senior faculty. While it is not clear how to accomplish this goal, the department would benefit greatly from having the Full Professors championing the integrative vision presented in the departments most recent vision statement. The Committee found it telling that the only group dumbstruck when asked, “What are the strengths of your department?” were the Full Professors.

10. Develop a formal faculty-mentoring plan. Assistant professors will benefit from advice from tenured faculty (these can be Associate Professors). Assign mentors to present tenure-track faculty dossiers during annual retention and promotion reviews.

11. Develop a rolling 2-year teaching plan including timing of course offering and assignment of faculty. Utilizing the student planning function within Degree Works to develop a forecast of course demand. Require each student to produce a 2-year course plan prior to advising, to be approved in consultation with the academic advisor, print the plan as a PDF and deposit it in a central file. After advising, administrative staff can collate plans into a tentative forecast of upper level course demand.

12. Increase enrollments of all sections of 101 and 102 to 200+ (with possible exception of sections taught by Ph.D. students – see #14, below). While few, if any, faculty enjoy teaching classes of this size, this increase will free a few instructional slots such that upper level courses could be taught on a more regular basis.

13. Work with other local Universities to develop a centralized recruiting fair at which potential employers can meet with sufficient numbers of students to warrant the expense.

14. The Committee debated a recommendation to use Ph.D. students in the classroom. One of several options would be to require that each Ph.D. student teach one small (<100 students) of section of GEO 101 as a requirement of their degree.

6B. Requiring New Funds or Allocating New Funds.

1. Hire two replacement and/or new faculty per year for the next five years (2014-2018). Use a combination of teaching and research needs, and the strategic planning put forth in the departmental vision statement and the revised 5-year plan to prioritize hires. Work
with the College and the University to develop a plan to provide necessary startup funds.

2. Increase start-up funds to attract highly qualified researchers and teachers. If UA is to be competitive with aspirational institutions, this must be accomplished. Develop the understanding that different sub-disciplines within Geoscience have greatly different startup needs.

3. After completion of a redistribution of existing departmental space within Bevill, acquire and modify (to suit departmental needs) additional research and teaching laboratory space. There should be a window of opportunity as the new Engineering building comes on line. The Department should develop a plan that shows existing space, modified assignments based on need and the to-be-established minimum space requirements (by research specialty, “wet” vs. “dry”; etc.) plus the laboratory and office space required for the Department’s growth to 20 research-active teaching scholars.

4. Address the “trailing” spouse issue. While this is a University-wide issue, it has impacted the Department in at least twice in the past two decades.

Note: The department, in consultation with the academic dean, will use an OAA template to formulate an “Action Plan.” For each recommendation by the review committee and consultant, the Plan must show the (1) actions(s) to be taken, (2) responsible person(s), and (3) timeline to completion. The dean must approve the Action Plan before it is discussed at the final program review meeting in the spring semester. Among the primary components of this review’s final report are the report by the committee, the report by the consultant, and the Action Plan.
ACTION PLAN
Committee Recommendation A.1

Eliminate the use of the three-year non-tenure track visiting assistant professor. The probability of hires meeting the stated objectives of the position is extremely low. The positions do not solve any of the Department’s critical needs, except for increased teaching (and there are other, established methods to do that). These positions are potentially exploitative of the individuals filling them.

### Action(s)

The present 3-year non-tenure track appointment held by Dr. Natasha Dimova was initiated as a result of part-time appointment arrangement of Dr. Chunmiao Zheng who has been spending fall semesters at the University of Alabama and spring semesters in Peking University in China since August 2011. This position helped the Department to have a full-time hydrologist to conduct research and teaching.

Presently, the Department is interviewing for a 3-year temporary Geophysicist position to start August 16, 2013. This position was initiated because one of our Geophysicist, Dr. Andrew Goodliffe has become the Assistant Dean of the UA Graduate College. The Department anticipates that the newly hired Geophysicist will strengthen our program with full time teaching and research.

These positions are common in Geological Sciences departments throughout the U.S.A. Candidates are aware of the conditions when they apply. Therefore, these positions should not be considered as “potentially exploitative of the individuals filling them.”

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<tr>
<th>Responsible Person(s)</th>
<th>DGS Chair</th>
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<tr>
<td>Timeline to Completion</td>
<td>DGS Chair will meet with the A&amp;S College Dean Robert Olin and Associate Dean Luoheng Han in spring, 2013 to discuss the future of temporary positions in the Department.</td>
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<td>Comments</td>
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Committee Recommendation A.2
(low-cost)

Develop a mechanism to effectively and equitably address the perceived space inequalities.

| Action(s) | All faculty members in the Department need research laboratory space (approximately 500 ft²/faculty member). The DGS will provide at least this amount of research space for each tenured or tenure-track faculty member. However, more space may be required in some sub-disciplines, such as geochemistry and to accommodate large external grant activities and/or large numbers of graduate students. Faculty may request additional laboratory space for their research groups by providing written justification. The Planning Committee will examine the existing space distribution in DGS and consider written justifications from faculty members to guide the equitable redistribution of existing research space. Even with reallocation of current space, the Department lacks sufficient office and laboratory space for new faculty positions as it plans to grow to 21 tenure-track and/or tenured positions by the fall 2018 semester. The Department will develop a plan for expansion and request additional space in Bevill Building to accommodate its growth. The A&S College Dean Robert Olin concurred with the internal committee recommendation that the Department needs to develop a mechanism to effectively and equitably address the perceived space inequalities. It is important that reallocation of space begins soon. Dean Olin recommended that inefficiently used research space, such as Bevill 2062, should be renovated for better utilization by all faculty and students. His recommendation is based on his conversations with several current and previous faculty members in the DGS. Dean Olin will provide funds to renovate the room. |

| Responsible Person(s) | DGS Planning Committee and other DGS faculty members. The Planning Committee consists of the following members: Ibrahim Çemen, Chair of the Planning Committee Rona Donahoe, Professor and Chair of the DGS Tenure and Promotion Committee Andrew Goodliffe, Associate Professor and Assistant Dean of the UA Graduate School |
Timeline to Completion
The DGS Planning Committee will meet in spring, 2013 and invite space needs justifications from all DGS faculty members.

The Committee Report will be discussed and finalized at the fall 2013 faculty retreat.

Implementation of the adopted space plan will begin in fall, 2013.

Comments

Committee Recommendation A.3
(low-cost)

Develop a more focused 5-year plan in terms of replacing key faculty with respect to teaching critical courses coupled with a rank ordering of targeted hires in focused research areas. Some sub-disciplines may need to be either strengthened or eliminated.

Action(s)

The DGS Strategic Plan proposes increasing departmental faculty to 21 members by the fall, 2018 semester in order to achieve the minimum size of top 40 public geoscience departments and to have maximum impact on teaching and research. Including normal faculty attrition due to retirement and resignations, the growth will probably require 2-3 faculty hires per year for the next 5 years. These positions will be targeted as cluster hires within the program areas identified in Department’s Vision Statement. These areas are Energy and Earth Resources; Geohazards and Environment as shown in the Departmental Venn Diagram below (Please see the updated Departmental Vision).
To accomplish this, we will require hiring in a number of specialties, strategically targeting areas of overlap on our vision plan. For example, we will seek the following positions:

- Seismic Stratigrapher (energy, environment, and geohazards)
- Carbonate Petrologist/Carbonate Geologist (energy and environment)
- Radiogenic Isotope Geologists (energy and environment)
- Climate Scientist - Climate Dynamics (environment and geohazards)
- Fluvial Hydrogeologist (environment and geohazards)
- Economic Geologist (Earth resources and environment)
- Biogeochemist (environment and energy)
- Marine Geologist (energy, environment, and geohazards)

The Energy and Earth Resource focus area is dedicated to extending limited fossil fuel and mineral resources required for our technological society. Four faculty positions (i.e., Seismic Stratigrapher, Carbonate Petrologist/Geologist, Marine Geologist, and Economic Geologist) will constitute a cluster hire designed to strengthen the Energy & Earth Resources program focus area of the Department and will also participate in the Center for Sedimentary Basin Studies. The Marine Geologist position will also increase DGS involvement at the Dauphin
Island Sea Lab. This position may be based at Dauphin Island Sea Lab in a similar way to a current position in the Department of Biological Sciences.

Geologic hazards include volcanic eruptions, earthquakes, flooding, coastal erosion, and climate change. Three faculty positions will strengthen our Geohazards program focus area. These positions are Fluvial Hydrogeologist, Seismic Stratigrapher, and Climate Scientist.

The Environment is a research/teaching focus area which seeks to understand and mitigate human impacts on the environment. Four faculty positions will be identified as a cluster hire for this program (Fluvial Hydrogeology, Biogeochemistry, Climate Scientist, and Marine Geologist).

Six of the proposed specialties (Seismic Stratigrapher, Carbonate Petrologist/Geologist, Marine Geologist, Climate Scientist, Fluvial Hydrogeologist, and Biogeochemist) would have a broad reach to other groups on campus, especially the Geological Survey of Alabama, and the NOAA Water Research Center. Therefore these positions are cluster hires related to the hydrogeology/environmental geology and environmental geochemistry research and teaching areas in the department. Three of these four specialties (Climate Scientist, Fluvial Hydrogeologist and Marine Geologist) will also have an impact on both the Center for Sedimentary Basin Studies and NOAA Water Research Center.

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<th>Responsible Person(s)</th>
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<tr>
<td>Prior to identifying a chair for the search committees of the replacement and new positions, the department will need approval from the A and S Dean Robert Olin. Thereafter, the chair will appoint a search committee for each position.</td>
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<th>Timeline to Completion</th>
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<tr>
<td>Recruitment will begin immediately upon approval of positions. In summer, 2013, The DGS will request from the College of Arts and Sciences a total of three positions. The first position is to replace Tim Masterlark, who left the Department in August 2012. The second position will be in support of the Energy and Earth resources research and teaching area. This position will also provide support for the Center for Sedimentary Basin Studies cluster hire recommended by the external reviewer. The third position will be in the environmental teaching and research area. This position will be part of the NOAA Water Research Center related cluster hire area recommended by the</td>
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Committee Recommendation A.4

(low-cost)

Increase research activity. The Chair, in consultation with the faculty should set some minimum level of research productivity. Faculty that fall below this level should increase their contributions to Departments goals in other ways, most likely via increased teaching loads. Running three-year averages are usually appropriate as many faculty have uneven productivity when viewed annually (i.e., two grants awarded one year with none the next; 1 paper one year, 4 the next, etc.).

| Action(s) | This item will be thoroughly discussed in a faculty meeting in the spring, 2013 semester. The Tenure and Promotion Committee will prepare a plan based on three-years averages. The plan will be finalized during the DGS retreat on August 19 and 20.

Presently, the DGS requires a minimum of on average one paper in a peer-reviewed scientific journal and or a special publication per year from untenured faculty members. The same rule also applies to tenured associate professors and full professors. |
|---|---|
| Responsible Person(s) | DGS Chair  
DGS Tenure and Promotion Committee  
DGS faculty members |
| Timeline to Completion | Any planned implementations will begin in fall, 2013. |
| Comments | external reviewer.  
For any approved positions, recruitment will begin in the fall, 2013 semester. |
**Committee Recommendation A.5**

*(low-cost)*

*Improve long-term planning by holding annual faculty retreats utilizing venues that help the faculty maintain focus (e.g. Bryant conference center, Moundville Archeological Park). Allow sufficient time between drafts and any resulting products for faculty input.*

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<tr>
<th>Action(s)</th>
<th>The DGS held a retreat of the Departmental Faculty on August 17, 2012, before the start of the 2012-2013 academic year. The DGS will have annual retreats at the start of the fall semesters. This year’s retreat will be a two-day retreat in an off-campus location on August 19 and 20, 2013. There will be a minimum of two weeks for faculty to comment on successive drafts of any documents produced.</th>
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<tr>
<td>Responsible Person(s)</td>
<td>DGS Planning Committee and other DGS faculty members. The planning committee consists of the following members: Ibrahim Çemen, Chair of the Planning Committee Rona Donahoe, Professor and Chair of the DGS Tenure and Promotion Committee Andrew Goodliffe, Associate Professor and Assistant Dean of the UA Graduate School Delores Robinson, Associate Professor and DGS Graduate Director Fred Andrus, Associate Professor and DGS Undergraduate Director Alberto Perez-Huerta, Assistant Professor</td>
</tr>
<tr>
<td>Timeline to Completion</td>
<td>The date and time for the retreat are already set. The agenda of the retreat will be made available to faculty on July 1, 2013. Any planned implementations from the retreat will begin in fall, 2013.</td>
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<td>Comments</td>
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Committee Recommendation A.6
(low-cost)

Establish a once-per-semester, Chair-graduate student meeting. The Chair can plan and invite all graduate students to the meeting thus providing a forum for graduate students.

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| The first Chair-graduate students meeting is already scheduled during the last week of classes on April 26, 2013. This will be a noon lunch meeting and will provide a forum for graduate students to tell the Chair their comments and concerns about the program, facilities, and faculty.  

The Chair-graduate students meeting will be in addition to the orientation meeting that the DGS already holds during the first week of classes with the new graduate students. |

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<th>Responsible Person(s)</th>
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| DGS Chair,  
DGS Graduate Program Director  
DGS Graduate Students |

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<tr>
<th>Timeline to Completion</th>
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| The first meeting is already scheduled.  
The second meeting will be held during the last week of classes in the fall, 2013 semester.  
This pattern of a fall meeting and a spring meeting during the last week of classes will be repeated in the years to come. |

Committee Recommendation A.7
(low-cost)

Establish within the Department Graduate Handbook clear guidelines for the process whereby a graduate student may change supervisors and for faculty members wishing to dismiss graduate students from their laboratories.
The DGS Graduate Program Director and Graduate Committee are working on a major re-write of the Graduate Handbook. This will include clear guidelines for graduate students who want to change supervisors and for faculty members wishing to dismiss students.

The DGS Graduate Program Director and Graduate Committee

The guidelines should be ready for faculty approval during our last faculty meeting of the spring, 2013 semester on April 19, 2013.

Any planned implementations will begin in fall, 2013.

Committee Recommendation A.8

(low-cost)

Explore the costs and benefits of teaching GEO 495 Field Geology within load. As a field course, it needs to be taught during the summer (which does generate extra income for faculty). However, as a required course it should be reflected within faculty teaching effort. Students clearly identified this course as critical to their development as geologists, thus this course should be protected at all costs.

The DGS chair will discuss this issue with the UA College of Arts and Sciences Dean Olin and Associate Dean Han in a meeting in spring, 2013. The issue may also be discussed during the Chair’s annual meeting with them. The Chair will also explore the possibilities of teaching the field camp as a regular capstone course through the continuing education. This may allow students from outside the UA Department of Geological Sciences to join the course without paying an out-of-state tuition fee.

Traditionally, this course is taught in most geology departments throughout the U.S. as a required capstone course in summer and faculty members involved in teaching the course get extra compensation. Therefore, the course has not been considered to be within the regular teaching load.

The DGS will discuss this issue during the departmental retreat in
August, 2013. The Field course will either be continued to be taught as an extra teaching load with compensation or it will become part of the regular teaching load without extra monetary compensation during the summers.

**Responsible Person(s)**

DGS Chair  
DGS Undergraduate Program Director  
DGS Field Camp Director  
DGS Field Camp Co-director,

**Timeline to Completion**

This issue will be finalized during the fall, 2013 retreat.  
Any planned implementations will begin in summer, 2014.

**Comments**

Committee Recommendation A.9  
(low-cost)

*Reduce tensions among the senior faculty. While it is not clear how to accomplish this goal, the department would benefit greatly from having the Full Professors championing the integrative vision presented in the departments most recent vision statement. The Committee found it telling that the only group dumbstruck when asked, “What are the strengths of your department?” were the Full Professors.*

**Action(s)**

This has been a long-lasting collegiality issue in the Department. The roots of the issue are too long to explain. Certainly, “the Department would definitely benefit greatly from having the Full Professors championing the integrative vision presented in the departments most recent vision statement.”  

The strength and future of the Department depend on the success of our Assistant and Associate Professors. To encourage Full Professors to resolve conflicts and assume greater leadership for departmental goals, the Chair will organize monthly dinner meetings with all senior faculty at convenient locations. The main goal of these dinner meetings is to explore the ways senior faculty can help junior
Committee Recommendation A.10

(low-cost)

Develop a formal faculty-mentoring plan. Assistant professors will benefit from advice from tenured faculty (these can be Associate Professors). Assign mentors to present tenure-track faculty dossiers during annual retention and promotion reviews.

Action(s)

The DGS will assign mentors to new Assistant Professors at the start of their appointment. The mentors will be determined after a meeting between the new Assistant Professor and the Chair to come to a consensus on who would be most appropriate. The new Assistant Professor will be given the option of having a mentor in the DGS or having two mentors; one from the DGS and another one from another science department at the UA.

The Assistant Professors who are already in the department would also be given the option of a mentor being assigned the same way as the new Assistant Professors to be hired.

The newly hired faculty will also be strongly encouraged to attend the first and second year faculty seminars organized monthly by the UA College of Arts and Sciences.
In spring, 2013, the DGS Chair will ask the assistant professors who are already in the department if they would like a mentor assigned. If their answer is yes, the Chair will assign them a mentor after a consultation meeting with the assistant professor and senior faculty who could be Associate or Full professor at the DGS.

Newly hired Assistant Professors will be assigned a mentor during their first semester in the DGS.

**Committee Recommendation A.11**

*(low-cost)*

*Develop a rolling 2-year teaching plan including timing of course offering and assignment of faculty.*

*Utilizing the student planning function within Degree Works to develop a forecast of course demand.*

*Require each student to produce a 2-year course plan prior to advising, to be approved in consultation with the academic advisor, print the plan as a PDF and deposit it in a central file. After advising, administrative staff can collate plans into a tentative forecast of upper level course demand.*

**Action(s)**

The Department is now implementing mandatory use of Degree Works planning features. Students and advisors are required to fill out a projected course of study in the plans. Data from these plans will be submitted to the Undergraduate and Graduate Program Director and DGS Chair to model expected enrollments in future classes.

**Responsible Person(s)**

DGS Chair, Graduate and Undergraduate Program Directors together with the Graduate and Undergraduate committee members

**Timeline to Completion**

Use of Degree Works planning is underway now.

A rolling 2-year teaching plan will be prepared after data from fall, 2013 semester advising and registration is complete.

**Comments**
Committee Recommendation A.12

*low-cost*

*Increase enrollments of all sections of 101 and 102 to 200+ (with possible exception of sections taught by Ph.D. students - see #14, below). While few, if any, faculty enjoy teaching classes of this size, this increase will free a few instructional slots such that upper level courses could be taught on a more regular basis.*

| Action(s) | DGS already holds two 260 seats sections of GEO 101 in fall semesters and three 260 seats sections of GEO 101 in spring semesters in Lloyd 38. The pro and cons of increasing the 260 seats sections of GEO 101 and establishing 260 seats sections for GEO 102; GEO 104 and GEO 105 will be discussed during the faculty retreat in August, 2013. It should also be pointed out that some faculty members enjoy teaching large sections. Moreover, large size classes will free “a few instructional slots such that upper level courses could be taught on a more regular basis.” |
| Responsible Person(s) | DGS Chair and faculty members |
| Timeline to Completion | Any planned implementations to begin in spring, 2014. |
| Comments | |

Committee Recommendation A.13

*low-cost*

*Work with other local Universities to develop a centralized recruiting fair at which potential employers can meet with sufficient numbers of students to warrant the expense.*
### Action(s)

Every year, the DGS holds two meetings with the Geological Sciences Advisory Board (GSAB); one in fall semesters in Tuscaloosa and another one in spring semesters at other locations. The board has helped our students to find jobs.

Most of GSAB members are located in Houston, Texas. Starting with spring, 2014, the spring meetings will be held in Houston, Texas every other year. We will invite the DGS seniors and graduate students who are interested in networking with the GSAB members to find a job in energy or environmental industry.

DGS Chair will send a memo to the other local Universities such as Auburn, Georgia Tech, Georgia, Georgia State, University of North Alabama, and the University of South Alabama to develop a centralized recruiting fair at which potential employers can meet with students and interview them for internships or regular positions.

The DGS Chair and the president of the UA American Association of Petroleum Geologists (AAPG) student chapter will get in touch with the AAPG Headquarters in Tulsa to develop a regional recruiting fair similar to those held nationally at other regional universities, such as the one at the University of Oklahoma.

### Responsible Person(s)

DGS Chair  
DGS Undergraduate Program Director  
DGS Graduate Program Director  
AAPG Student Chapter President

### Timeline to Completion

Any planned implementations to begin in fall, 2013 or spring, 2014.

### Comments

Committee Recommendation A.14  
(low-cost)

The Committee debated a recommendation to use Ph.D. students in the classroom. One of several options would be to require that each Ph.D. student teach one small (<100 students) of section of GEO
101 as a requirement of their degree.

**Action(s)**

This issue has been discussed by the DGS planning committee extensively. One problem is how to resolve this with the present day GTA structure of the Department. Presently, DGS has enough GTAs just to cover the lab sections of the classes taught every semester.

Under special circumstances, the DGS may consider assigning a qualified Ph.D. student to teach a small (110 students) section of GEO 101 towards the end of his/her Ph. D. program in the Department.

**Responsible Person(s)**

DGS Chair  
GEO 101 Coordinator  
Undergraduate Program Director

**Timeline to Completion**

Any planned implementations to begin in spring, 2014.

**Comments**

Committee Recommendation B.1

*(high-cost)*

Hire two replacement and/or new faculty per year for the next five years (2014-2018). Use a combination of teaching and research needs, and the strategic planning put forth in the departmental vision statement and the revised 5-year plan to prioritize hires. Work with the College and the University to develop a plan to provide necessary startup funds.

**Action(s)**

In summer, 2013, the DGS will request from the College of Arts and Sciences a total of three positions. The first position is to replace Tim Masterlark, who left the Department in August 2012. The second position will be in support of the Energy and Earth resources research and teaching area. This position will also provide support for the Center for Sedimentary Basin Studies cluster hire recommended by the external reviewer. The third position will be in the environmental teaching and research area. This position will be part of the NOAA
Water Research Center related cluster hire area recommended by the external reviewer.

In the summers of 2014 - 2018, the DGS will use a combination of teaching and research needs, and the strategic planning put forth in the departmental vision statement to request from the UA College of Arts and Sciences two new positions each year and any replacement needs that may arise due to unexpected departure or retirement of the present tenured and tenure-track faculty.

The DGS Chair will work with the College and the University to develop a plan to provide necessary startup funds for each position.

**Responsible Person(s)**

Prior to identifying a chair for the search committees of the replacement and new positions, the department will need approval from the A&S Dean. Thereafter, the Chair will appoint a search committee for each position.

**Timeline to Completion**

Recruitment to begin immediately upon approval of positions. If approved, recruitment for the one replacement and two new positions will begin in the fall 2013 semester.

Recruitment for other positions will also begin in the fall semesters of 2014-2018.

**Committee Recommendation B.2**

*(high-cost)*

*Increase start-up funds to attract highly qualified researchers and teachers. If UA is to be competitive with aspirational institutions, this must be accomplished. Develop the understanding that different sub-disciplines within Geoscience have greatly different startup needs.*

**Action(s)**

The A&S College Dean Robert Olin has informed the Department that the UA has increased the start-up package for incoming science faculty hired in spring, 2013.
In spring, 2013, the DGS Chair and the Chair of the Tenure and Promotion committee will collect data from other our Geological Sciences departments considered as our peer institutions. These include geological sciences departments at Texas A&M, University of Texas, University of Houston, University of Georgia, Ohio State, Penn State, University of North Carolina, and Louisiana State University. The Chair will prepare a spreadsheet for the start-up funds that have been given to the newly hired faculty within the last two years in these schools.

These data will be used to request competitive start-up funds for similar sub-disciplines in our peer institutions. The UA Arts and Sciences Dean Robert Olin is committed to provide necessary startup funds for new faculty members hired at the Department.

| Responsible Person(s) | DGS Chair  
| DGS Tenure and Promotion Committee Chair |
| Timeline to Completion | Data collection will be completed by the end of the spring, 2013 semester. |
| Comments |

**Committee Recommendation B.3**

*(high-cost)*

After completion of a redistribution of existing departmental space within Bevill, acquire and modify (to suit departmental needs) additional research and teaching laboratory space. There should be a window of opportunity as the new Engineering building comes on line. The Department should develop a plan that shows existing space, modified assignments based on need and the to-be-established minimum space requirements (by research specialty, “wet” vs. “dry”; etc.) plus the laboratory and office space required for the Department’s growth to 20 research-active teaching scholars.

| Action(s) | DGS needs more space for the currently very small optical mineralogy lab. The Department has prepared a Project Initiation Request to |
expand the current lab into an adjacent storage area. The Department has received a formal estimate from the UA facilities. The project has been approved by the A&S Dean Robert Olin. The renovations will start in May, 2013 and the new optical lab will be ready for the fall, 2013 semester.

The Department of Geological Sciences would certainly like to use the opportunity of obtaining new space in Bevill Building as the new Engineering building comes on line. The Department is developing a comprehensive “plan that shows existing space, modified assignments based on need, and the to-be-established minimum space requirements (by research specialty, ‘wet’ vs. “dry”; etc.) plus the teaching, research laboratory and office space required for the Department’s growth to 20 research-active teaching scholars.” Obviously, the UA Provost will make the final decision on space allocations when the new Engineering building comes on line.

Based on examination of the space in Bevill, as a start, DGS would like to make the following requests.

**Teaching:**

DGS would like to request renovations in room 9 in the basement of Bevill. This room is the old mine simulation space that has been converted into unfinished lecture room space. Currently, the room seems underutilized and could perhaps be used much more efficiently. We propose converting this space into a state of the art multi-media lecture theater. It should be noted that Geological Sciences does not have any such space for use by any of our geology majors. Upper level undergraduate classes will be held in this room. Though we have been as yet unable to gain access to the space, we anticipate there being plenty of space for a 60 person lecture room. We anticipate designing this as a flexible space that could will support modern, active, and collaborative pedagogy. This space could be used by other departments when available.

There is significant need in the Department for new space for computer-based classes. Three current classes, GEO 545 Multichannel seismic processing, GEO 546 Scientific Computing, and GEO 525; Hydrocarbon Exploration Methods, are currently taught in our Graduate Computer lab. This room can only accommodate a maximum class size of 8. However, at least two of these classes are high-demand graduate classes in the important area of Energy
research. These courses typically get more than 15 students wanting to sign up. It should be noted that although this has been tried, the computers installed in the current A&S eTech labs are not capable of running many of the high end software packages used in our classes. This includes software obtained through Halliburton and Schlumberger as part of multi-million dollar grants. We would like to renovate 2/3 of the Bevill 0005 to become a computer lab. This should require minimal renovation. The Department is working on plans to prepare a Project Initiation Request for this renovation.

**Research Laboratories and Faculty Offices:**
The DGS plans to reach 21 research/teaching active faculty members by the fall, 2018 semester. New hires will need, at least, approximately 500 ft$^2$ of research laboratory space and new office space. Therefore, the Department would like to request 6 new research labs (approximately 500 ft$^2$ each) and 6 new faculty office space in Bevill by the start of fall, 2018 semester. Moving the computer lab to Bevill 0005 will provide an additional lab space for a new faculty member. Therefore, we anticipate that 5 new research lab space (approximately 500 ft$^2$ each) will be needed by the fall, 2018 semester. This space may be available when the new Engineering building is finished and the Bevill may become an entirely the UA College of Arts and Sciences Building.

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<td>Ibrahim Çemen, Chair of the Planning Committee</td>
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<td>Fred Andrus, Associate Professor and DGS Undergraduate Program Director</td>
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<td>Alberto Perez-Huerta, Assistant Professor</td>
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<th>Timeline to Completion</th>
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| The new optical lab should be ready for the fall, 2013 semester. A comprehensive plan to request more teaching space, research laboratory and faculty offices in Bevill will be developed in summer,
2013 and will be submitted to the College of Arts and Sciences Dean Robert Olin in fall, 2013. The UA Provost will make the final decision on space allocations when “the new Engineering building comes online.”

Committee Recommendation B.4
(high-cost)

Address the “trailing” spouse issue. While this is a University-wide issue, it has impacted the Department in at least twice in the past two decades.

Action(s)
In recent years, the UA higher administration and the College of Arts and Sciences Dean Robert Olin have been very supportive of spousal hiring.

Of immediate concern to the DGS is the trailing spouse of Dr. Yuehan Lu whose husband Dr. Takehito Ikejiri has a Ph.D. in Paleontology. Dr. Ikejiri is teaching a section of our Invertebrate Paleontology course as a PTTI in the spring, 2013 semester.

Responsible Person(s)
DGS Chair

Timeline to Completion
Any future spousal hire will be discussed with the A&S College Dean Robert Olin.

Consultant Recommendation A.1
(low-cost)

Make a strong commitment to taking steps that focus on working collaboratively with the new NOAA Water Research Center and the Alabama Geological Survey. A good collaborative environment is present on the campus, and several faculty members are taking advantage of this opportunity. However, the
specific steps above are examples of opportunities to take advantage of this environment.

| Action(s)                                                                 | The DGS faculty will devise an initial plan for increasing collaboration with external groups, including the new NOAA Water Research Center and the Geological Survey of Alabama (GSA). Many DGS faculty members are already involved with collaborative research projects with the GSA. DOE-funded Carbon Sequestration research (Goodliffe, and Hansen) and Gulf Coast oil spill remediation projects (Goodliffe, Donahoe, Andrus, Perez-Huerta, Lu) would not be possible without collaboration with groups external to the department such as GSA.

Faculty members involved in water research (Zheng, Donahoe, Tick, Lu and Dimova) have already been involved in information-sharing meetings between UA researchers and NOAA personnel. These faculty will meet with Joe Benson, the UA Interim Provost and VP of Research to discuss potential collaborative research initiatives with the new NOAA Water Research Center and USGS Water Resources Regional Office, which will share space in the new NOAA building. Faculty members involved in Alabama-specific issues (Goodliffe, Robinson, Aharon, Stowell and Cemen) will meet with Nick Tew, Alabama State Geologist and Director of the Oil and Gas Board, to explore future collaborations and student internship opportunities. The dates of these meetings are March 1, 2013, and March 18, 2013 respectively. The purpose of the meetings is to develop action plans for cooperative research with the NOAA water center and Alabama Geological Survey. DGS also will ask the UA College of A&S Dean Robert Olin to join these meetings. |
| Responsible Person(s)                                                  | DGS Chair and faculty members. |
| Timeline to Completion                                                  | DGS faculty involved in water research will meet with Joe Benson in spring 2013. |
|                                                                      | DGS faculty involved in Alabama-specific research projects will meet with Nick Tew in spring 2013. |
Consultant Recommendation A.2

*(low-cost)*

*It is clear that the department needs more research and teaching space. Furthermore, existing space needs to be more equitably shared as part of a space expansion plan. For example, it appears that the very crowded optics lab could easily be expanded, and this should be considered. The same situation applies to the computer lab for graduate students.*

**Action(s)**

The planning committee will look into space distribution in DGS and will ask written justifications from faculty members to guide the equitable redistribution of existing research space. All faculty members in the department need research laboratory space (~500 ft²/faculty member). DGS will provide at least this amount of research space for each faculty member. However, more space may be required in some sub-disciplines and to accommodate large external grant activities and/or large numbers of graduate students. Currently, the department lacks sufficient space to provide office and laboratory space to faculty for many new positions as it plans to grow to 21 tenure-track and/or tenured positions by the fall, 2018 semester. The department will request additional space in Bevill Building.

A project initiation request to expand the optics lab has been prepared and submitted to the UA College of A&S Dean Robert Olin.

The A & S College Dean Robert Olin concurs with the consultant’s recommendation that existing space in the DGS needs to be more equitably shared as part of a space expansion plan. It is important that reallocation of space begins before new space becomes available in Bevill. Dean Olin recommended that inefficiently used research space, such as Bevill 2063, should be renovated for better utilization by all faculty and students. His recommendation is based on his conversations with several current and previous faculty members in the DGS. Dean Olin will provide funds to renovate the room.
Responsible Person(s)

DGS Planning Committee and other DGS faculty members. The planning committee consists of the following members:
Ibrahim Çemen, Chair of the Planning Committee
Rona Donahoe, Professor and Chair of the DGS Tenure and Promotion Committee
Andrew Goodliffe, Associate Professor and Assistant Dean of the UA Graduate School
Delores Robinson, Associate Professor and DGS Graduate Program Director
Fred Andrus, Associate Professor and DGS Undergraduate Program Director
Alberto Perez-Huerta, Assistant Professor

Timeline to Completion

DGS Planning Committee will meet in spring, 2013 and request new space need and its justification from all DGS faculty members. The Committee Report will be due to faculty for discussion in the fall 2013 semester DGS Retreat. Any planned implementations will begin in fall, 2013.

Consultant Recommendation A.3

(low-cost)

It appears that Full Professors need to mentor and nurture the Assistant Professors more and to exercise more leadership for the department to advance and fulfill many of its strategic goals. For example, large sections (260 seats) of introductory geology classes should not be assigned to Assistant Professors until at least their second year. In addition, the stopgap practice of 3-year, non-tenure track appointments should be avoided if at all possible.

Action(s)

The DGS will assign mentors to new Assistant Professors at the start of their appointment. The mentors will be determined after a meeting between the new professor and the Chair to come to a consensus on who would be most appropriate.
The DGS Chair and the Chair of the DGS T&P Committee will discuss the 3-year non-tenure track appointments with the A&S Dean Robert Olin and Associate Dean Luoheng Han.

The DGS will NOT assign large sections (260 seats) of introductory geology classes to tenure-track Assistant Professors until at least their third year at the UA.

Responsible Person(s)

DGS Chair
Chair of the DGS Tenure and Promotion Committee

Timeline to Completion

DGS Chair will meet with A&S Dean Robert Olin and Associate Dean Luoheng Han in spring, 2013
Any planned implementations to begin in fall, 2013

Comments

Consultant Recommendation A.4

(low-cost)

I appreciate that this is being done to some extent at this time. However, M. S. students should be strongly encouraged from the beginning to present their thesis in the form of a paper basically ready for submission. PhD students should ideally have some portion of their research already published or at least submitted before their dissertation defense. In any case, their dissertation should be prepared in chapters which are each prepared as a paper that is ready for submission. This approach helps the students get off to a fast start in their careers, helps the faculty member(s) who have advised and supported the research and are presumably coauthors of the papers, and helps the department with its visibility and scientific impact.

Action(s)

The DGS Planning Committee has discussed all of the recommendations in item #A4 during the preparation of the DGS 5-year strategic plan and has created a new graduate curriculum proposal (Please see Appendix B of the DGS strategic plan.)
In the proposed curriculum:
a) M.S. degree students are strongly encouraged from the beginning
to present their thesis in the form of a paper ready for submission to a prestigious scientific publication. They will still have the option to write their research in a thesis format if the advisor feels that this will be more appropriate.

b) Ph.D. students are required to submit 3 papers for publication in earth science journals in order to graduate; at least one paper must be accepted for publication. They also must make three presentations at National/International meetings.

As pointed out by the external consultant, the DGS Planning Committee has proposed these changes to make our graduates more marketable in a highly competitive job market. This will also increase the departmental visibility and scientific impact.

The DGS faculty will implement the proposed changes in the fall, 2013 semester retreat

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**Consultant Recommendation A.5**

*(low-cost)*

There is a need to develop flexible systems so that students have better access to “writing classes” and electives that both upper-division and beginning graduate students can jointly access. One such class could be quantitative analysis/geostatistics. Also, the formal course requirements for PhD students should be revisited.

| Action(s) | The DGS Planning committee has discussed the recommendations in item #A5 during the preparation of the DGS 5-year strategic plan. We have proposed a new undergraduate curriculum with additional |
W classes and more elective courses (Please see the Appendix A of the DGS strategic plan)

In the proposed curriculum, the DGS plans to offer three new 200-level classes. They are:

- GEO 201: Geologic Foundations
- GEO 202: Dinosaurs
- GEO 203: Geology of the National Parks

At least two of the newly proposed courses will be designated as W courses.

The DGS faculty will implement the proposed undergraduate curriculum shortly. The DGS will also teach a 400/500 level quantitative analysis/geostatistics course.

The formal course requirements for Ph.D. students will also be discussed by the DGS faculty.

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<td>Any planned implementations to begin after they are approved by the proper University Committees in fall 2013.</td>
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**Consultant Recommendation A.6**

*(low-cost)*

An active faculty travels often, and today’s environment requires that students have a broad view of the geological sciences. Presently, some students feel reluctant to seek faculty input from anyone other than their direct advisor. Some steps should be taken to relieve this impression so students can benefit from broad faculty input.

| Action(s) | The DGS plans to require at least one committee meeting for the M.S |
and Ph.D. students per semester. This will help students and the committee discuss the progress that a particular student has made. Moreover, the DGS will strongly encourage students to seek input from other faculty members who are not their direct advisor. These measures will relieve the impression students have that they should not seek advice from other faculty members in addition to their major M.S. or Ph.D advisor.

**Consultant Recommendation B.1**

*(high-cost)*

Move quickly to replace the young faculty members who have recently left the department. In order to have the maximum impact on teaching and research, a strategic plan needs to be thought through for these hires. For example, I recommend that the department consider a cluster hire to revive the Basin Research Center. This move would be attractive to the energy industry, and their support could be substantial if they are brought into the process at an early stage. Such a center should have a broad reach that would include the new faculty who are badly needed as well as other groups on campus, especially the Alabama Geological Survey. It would also be relevant to the NOAA Water Research Center.

**Action(s)**

The DGS will request a replacement for Tim Masterlark, who left the department in August 2012. This position is essential to continue our departmental strength in Geodynamics/computational geoscience. The continued health of the geophysical program depends on this position. Further, it is critical to the training of undergraduate and graduate geology majors. The recent growth in the department’s very successful research program in geophysics and hydrogeology will not be sustainable without this position.
The DGS Strategic Plan proposes increasing departmental faculty to 21 members by the fall, 2018 semester in order to achieve the minimum size of top 40 public geoscience departments and to have maximum impact on teaching and research. Including normal faculty attrition due to retirement and resignations, the growth will probably require 2-3 faculty hires per year for the next 5 years. These positions will be targeted as cluster hires within the program areas identified in Department’s Vision Statement. These areas are Energy and Earth Resources; Geohazards and Environment as shown in the Departmental Venn Diagram (See the DGS vision statement).

To accomplish this, we will require hiring in a number of specialties, strategically targeting areas of overlap on our vision plan. For example, we will seek the following positions:

- Seismic Stratigrapher (energy, environment, and geohazards)
- Carbonate Petrologist/Carbonate Geologist (energy and environment)
- Radiogenic Isotope Geologists (energy and environment)
- Climate Scientist - Climate Dynamics (environment and geohazards)
- Fluvial Hydrogeologist (environment and geohazards)
- Economic Geologist (Earth resources and environment)
- Biogeochemist (environment and energy)
- Marine Geologist (energy, environment, and geohazards)

The Energy and Earth Resource focus area is dedicated to extending limited fossil fuel and mineral resources required for our technological society. Four faculty positions (i.e., Seismic Stratigrapher, Carbonate Petrologist/Geologist, Marine Geologist, and Economic Geologist) will constitute a cluster hire designed to strengthen the Energy & Earth Resources program focus area of the Department and will also participate in the Center for Sedimentary Basin Studies. The Marine Geologist position will also increase DGS involvement at the Dauphin Island Sea Lab. This position may be based at Dauphin Island Sea Lab in a similar way to a current position in the Department of Biological Sciences.

Geologic hazards include volcanic eruptions, earthquakes, flooding, coastal erosion, and climate change. Three faculty positions will
strengthen our Geohazards program focus area. These positions are Fluvial Hydrogeologist, Seismic Stratigrapher, and Climate Scientist.

The Environment is a research/teaching focus area which seeks to understand and mitigate human impacts on the environment. Four faculty positions will be identified as a cluster hire for this program (Fluvial Hydrogeology, Biogeochemistry, Climate Scientist, and Marine Geologist).

Six of the proposed specialties (Seismic Stratigrapher, Carbonate Petrologist/Geologist, Marine Geologist, Climate Scientist, Fluvial Hydrogeologist, and Biogeochemist) would have a broad reach to other groups on campus, especially the Geological Survey of Alabama, and the NOAA Water Research Center. Therefore these positions are cluster hires related to the hydrogeology/environmental geology and environmental geochemistry research and teaching areas in the department. Three of these four specialties (Climate Scientist, Fluvial Hydrogeologist and Marine Geologist) will also have an impact on both the Center for Sedimentary Basin Studies and NOAA Water Research Center.

**Responsible Person(s)**

Prior to identifying a chair for the search committees of the replacement and new positions, the department will need approval. Recruitment will begin immediately upon approval of positions.

**Timeline to Completion**

Recruitment will begin immediately upon approval of positions.

In summer, 2013, The DGS will request from the College of Arts and Sciences a total of three positions. The first position is to replace Tim Masterlark, who left the Department in August 2012. The second position will be in support of the Energy and Earth resources research and teaching area. This position will also provide support for the Center for Sedimentary Basin Studies cluster hire recommended by the external reviewer. The third position will be in the environmental teaching and research area. This position will be part of the NOAA Water Research Center related cluster hire area recommended by the external reviewer.

For any approved positions, recruitment will begin in the fall, 2013 semester.
Consultant Recommendation B.2

(high-cost)

Start-up funds for Assistant Professors should be more comparable to those in other science departments in the college. However, given the constraints on space and funding and programmatic imbalances, the department should consider a plan for new hires focused on broadening its programs in areas where large labs and very expensive equipment are not required.

Action(s)

The A&S College Dean Robert Olin has informed the Department that the UA has increased the start-up package for incoming science faculty hired in spring, 2013.

In spring, 2013, the DGS Chair and the Chair of the Tenure and Promotion committee will collect data from other our Geological Sciences departments considered as our peer institutions. These include geological sciences departments at Texas A&M, University of Texas, University of Houston, University of Georgia, Ohio State, Penn State, University of North Carolina, and Louisiana State University. The Chair will prepare a spreadsheet for the start-up funds that have been given to the newly hired faculty within the last two years in these schools.

These data will be used to request competitive start-up funds for similar sub-disciplines in our peer institutions. The UA Arts and Sciences Dean Robert Olin is committed to provide necessary startup funds for new faculty members hired at the Department.

Responsible Person(s)

DGS Chair
DGS Tenure and Promotion Committee Chair

Timeline to Completion

Data collection will be completed by the end of the spring, 2013 semester.
Consultant Recommendation B.3

(high-cost)

It is clear that the department needs more research and teaching space. However, existing space needs to be more equitably shared as part of a space expansion plan. For example, it appears that the very crowded optics lab could easily be expanded, and this should be considered. The same situation applies to the computer lab for graduate students. Then, existing space that is scheduled to become available in the Bevill Building can hopefully be allocated to the department and modified in a cost-effective way.

Action(s)

The A&S College Dean Robert Olin concurred with the internal committee recommendation that the Department needs to develop a mechanism to effectively and equitably address the perceived space inequalities. It is important that reallocation of space begins soon. Dean Olin recommended that inefficiently used research space, such as Bevill 2062, should be renovated for better utilization by all faculty and students. His recommendation is based on his conversations with several current and previous faculty members in the DGS. Dean Olin will provide funds to renovate the room.

DGS needs more space for the currently very small optical mineralogy lab. The Department has prepared a Project Initiation Request to expand the current lab into an adjacent storage area. The Department has received a formal estimate from the UA facilities. The project has been approved by the A&S Dean Robert Olin. The renovations will start in May, 2013 and the new optical lab will be ready for the fall, 2013 semester.

The Department of Geological Sciences would certainly like to use the opportunity of obtaining new space in Bevill Building as the new Engineering building comes on line. The Department is developing a comprehensive “plan that shows existing space, modified assignments based on need, and the to-be-established minimum space requirements (by research specialty, ‘wet’ vs. “dry”; etc.) plus the teaching, research laboratory and office space required for the Department’s growth to 20 research-active teaching scholars.” Obviously, the UA Provost will make the final decision on space allocations when the new Engineering building comes on line.
Based on examination of the space in Bevill, as a start, DGS would like to make the following requests.

**Teaching:**
DGS would like to request renovations in room 9 in the basement of Bevill. This room is the old mine simulation space that has been converted into unfinished lecture room space. Currently, the room seems underutilized and could perhaps be used much more efficiently. We propose converting this space into a state of the art multi-media lecture theater. It should be noted that Geological Sciences does not have any such space for use by any of our geology majors. Upper level undergraduate classes will be held in this room. Though we have been as yet unable to gain access to the space, we anticipate there being plenty of space for a 60 person lecture room. We anticipate designing this as a flexible space that could will support modern, active, and collaborative pedagogy. This space could be used by other departments when available.

There is significant need in the Department for new space for computer-based classes. Three current classes, GEO 545 Multichannel seismic processing, GEO 546 Scientific Computing, and GEO 525; Hydrocarbon Exploration Methods, are currently taught in our Graduate Computer lab. This room can only accommodate a maximum class size of 8. However, at least two of these classes are high-demand graduate classes in the important area of Energy research. These courses typically get more than 15 students wanting to sign up. It should be noted that although this has been tried, the computers installed in the current A&S eTech labs are not capable of running many of the high end software packages used in our classes. This includes software obtained through Halliburton and Schlumberger as part of multi-million dollar grants. We would like to renovate 2/3 of the Bevill 0005 to become a computer lab. This should require minimal renovation. The Department is working on plans to prepare a Project Initiation Request for this renovation.

**Research Laboratories and Faculty Offices:**
The DGS plans to reach 21 research/teaching active faculty members by the fall, 2018 semester. New hires will need, at least, approximately 500 ft² of research laboratory space and new office space. Therefore, the Department would like to request 6 new research labs (approximately 500 ft² each) and 6 new faculty office space in Bevill by the start of fall, 2018 semester. Moving the
The computer lab to Bevill 0005 will provide an additional lab space for a new faculty member. Therefore, we anticipate that 5 new research lab space (approximately 500 ft$^2$ each) will be needed by the fall, 2018 semester. This space may be available when the new Engineering building is finished and the Bevill may become an entirely the UA College of Arts and Sciences Building.

### Responsible Person(s)

DGS Planning Committee and other DGS faculty members. The planning committee consists of the following members:

- Ibrahim Çemen, Chair of the Planning Committee
- Rona Donahoe, Professor and Chair of the DGS Tenure and Promotion Committee
- Andrew Goodliffe, Associate Professor and Assistant Dean of the UA Graduate School
- Delores Robinson, Associate Professor and DGS Graduate Director
- Fred Andrus, Associate Professor and DGS Undergraduate Director
- Alberto Perez-Huerta, Assistant Professor

### Timeline to Completion

The new optical lab should be ready for the fall, 2013 semester.

A comprehensive plan to request more teaching space, research laboratory and faculty offices in Bevill will be developed in summer, 2013 and will be submitted to the College of Arts and Sciences Dean Robert Olin in fall, 2013. The UA Provost will make the final decision on space allocations when “the new Engineering building comes on line.”

### Comments

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