UCC Program Review Committee summary of review

Program – Department of Geological Sciences

This program includes the following degrees, minors, and certificates:

- B.A. Geological Sciences
- B.S. Geological Sciences
- B.S. Environmental Geology
- B.S. Geological Sciences – Honors Tutorial College
- Minor in Geological Sciences
- M.S. Geological Sciences

Recommendation

This program is found to be **viable**, see report for commendations, concerns, and recommendations.

Date of last review – AY 2009

Date of this review – AY 2017

This review has been sent to department chair and the dean. The dean's response is attached, the chair had no comments.

This review was sent to the Graduate Council. The Graduate Council endorses the recommendations in the reports and returned them to Program Review Committee without further comment.

Department of Geological Sciences
College of Arts & Sciences
Ohio University

Seven Year Academic Assessment Report

December 2017

Internal Reviewers:
Catherine Axinn, Department of Marketing, College of Business
Timothy G. Anderson, Department of Geography, College of Arts & Sciences

External Reviewer:
Scott E. Ishman, Department of Geology, Southern Illinois University

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Introduction

At the request of David Ingram, Chair of the UCC Program Review Committee, we were asked to conduct a review and assessment of the Department of Geological Sciences regarding the overall state and quality of the program. In conjunction with the internal review, Dr. Scott Ishman of the Department of Geology at Southern Illinois University was asked to conduct an external review and visited the department and held interviews with faculty and students on November 8 and 9, 2017. The department's chairperson, Dr. Greg Springer, provided a copy of the department's self-assessment document to both the internal and external reviewers. This document details self-assessed effectiveness with regard to faculty teaching, research and service, as well as undergraduate and graduate student quality. At the end of his visit to campus, the two internal reviewers met with the external reviewer to discuss the preliminary assessment, compare notes, and review the assessment procedure. The external reviewer authored a separate assessment document, included as an appendix at the end of this document. The assessment report that follows, therefore, is that of the two internal reviewers, but it also draws upon and is informed by the external reviewer's assessment. With regard to content and organization, the report follows the suggestions of the UCC for departmental reviews.

1. The Program as a Whole

A. The number and distribution of faculty with regard to the broad overall mission of the Department (teaching; research, scholarship and creative activity; service);

The current faculty includes 9 Group I faculty members, all of whom are tenured, and one Group IV non-tenure-track faculty member. The current number of faculty is sufficient to carry out the broad overall mission of the department at the present time. The department, however, has experienced some notable changes to the faculty since the last assessment: one faculty member retired in 2017 and another unexpectedly passed away in 2015. Moreover, two faculty members will retire in the very near future, one in December 2017 and the other in 2018 or 2019. In response, the department's curriculum has been slightly adjusted to reflect these faculty changes. In spite of these changes to the faculty, the department is to be commended for maintaining enough course offerings to allow students to make normal progress. This has been accomplished through proactive and innovative curriculum adjustments, including adding Tier II general education courses and on-line courses.

B. The level of the Department's research, scholarship and creative activity, and external funding relative to the size of the faculty and available resources;

Given the number of faculty and workload expectations (40-40-20), the overall research productivity of the department is very strong, with over 200 publications since the last assessment in 2009. A majority of the faculty and graduate students regularly attend and present research papers at national and international conferences, and several faculty members have co-authored studies in peer-reviewed journals with graduate students. With regard to external funding, the faculty has collectively brought in just over $1.3 million dollars over the past seven years. The external reviewer points out that this figure is somewhat lower than peer departments, but compared with other departments in the university we believe the reported level of external funding to be exemplary.

C. The level of service, outside of teaching. Is the Department able to fulfill its service mission?

Service expectations have increased for most academic units in the university over the past decade. Geological Sciences has been able to meet its service mission, in spite of a decrease in faculty members and decreased budgets. The self-assessment report indicates that one area for improvement is the level of intra-university collaboration, and we agree with the self-assessment that the College of Arts & Science's themes initiatives presents an opportunity to increase such collaboration.

D. Financial resources, staff, physical facilities and technological resources;

The Department currently faces challenges with regard to staffing as outlined above; the loss of four faculty members over such a short period has certainly affected teaching and research capabilities. Although the Department has addressed these issues in the short run through innovative curriculum adjustments, in the long-term it will be necessary to fill vacant faculty

positions in order to sustain quality in terms of teaching, research and service obligations. Currently, the physical facilities and technological resources afforded the Department are adequate with regard to teaching and research needs. However, the external reviewer points out that the physical facilities are actually inadequate and outdated, and although the equipment used in teaching and research is adequate it is also becoming outdated. One bright spot with regard to finances is the level of support from alumni, and the Department should be congratulated on developing a very strong alumni relations program.

2. Undergraduate Program

A. The Department's service role, preparing non-majors for future coursework and satisfying the needs for general education;

The Department has performed very well in this regard. The Department offers a variety of Tier II general education courses that serve students in the sciences, in Engineering and in Education. Especially noteworthy is the development of several on-line courses; the external reviewer points out that very few geoscience departments have developed such courses.

B. Is the program attracting majors? Is the number of majors appropriate? Is the program attracting a diverse group of students?

The Department has maintained an average of 70 to 90 undergraduate majors over the review period, and the program is to be commended for attracting and recruiting students from its general education courses. The fluctuation seen in numbers of majors is normal for a geoscience program, as it tends to fluctuate with cycles in the fossil fuel industry. With regard to diversity, there is certainly room for improvement, as undergraduate majors are dominated by white males, although the number of female majors has increase recently. It should be noted, however, that this lack of diversity, while an area of concern, is a national trend as well in the geosciences. The Department notes this in its self-assessment document and concurs that there is room for improvement in this regard.

C. Does the undergraduate curriculum provide majors with an adequate background to pursue discipline-related careers or graduate work following graduation?

The Department has a very high success rate (about 90%) with regard to the percentage of students attaining jobs in the discipline or being accepted into a graduate program. Otherwise, the self-assessment document does not quantitatively measure undergraduate student success. Again, the development of a very strong alumni advisory board is to be commended, and there has been demonstrated success with regard to the Board monitoring the quality of the undergraduate program in relation to changes in the fossil fuel industries.

D. Are the resources and the number of and distribution of faculty sufficient to support the undergraduate program?

Currently, the number and distribution of faculty is sufficient to support the undergraduate program. However, recent and impending faculty retirements will place increasing pressure on the remaining faculty, and if not replaced the number and distribution of faculty will become increasingly inadequate to fulfill the teaching mission of the department. Current teaching space and technology are adequate but are becoming outdated and in need of replacement.

E. Are pedagogical practices appropriate? Is teaching adequately assessed?

As mentioned before, the Department has been quite innovative in adjusting its curriculum to recent changes to the faculty, such as the development of online courses, flipped-class formats and co-curricular activities. With regard to the assessment of teaching effectiveness, there is some room for improvement, primarily with regard to quantifying/measurement of success. According to the self-assessment document, the primary measure of student success is the placement of students in either graduate school or employment. This appears to be adequately measured. The self-study also notes that student performance in a comprehensive field course is another gauge of student success, but the Department does not appear to have a comprehensive assessment process by which student learning can be quantitatively measured, nor a system in which such findings can be used to adjust and/or improve the curriculum.

F. Are students able to move into discipline-related careers and/or pursue further academic work?

According to the self-assessment document, about 90% of the Department's graduates successfully find jobs in their discipline or are accepted into a graduate program, so this indicates a high level of success in this regard.

3. Graduate Program

A. Is the program attracting students likely to succeed in the program? Is the number and diversity of students appropriate?

The MS program is very strong and, according to the external reviewer, has a very good reputation nationally. The graduate program consistently has about 20 students, which reflects the number of TA/GA appointments available to the Department. Graduate students complete their master's program in an average of 2.4 years, which the external reviewer points out is much better than the national average in peer programs. The quality of graduate students that the program attracts is very high when measured by presentations at national conferences and publications with faculty co-authors in peer-reviewed publications. With regard to diversity, racial diversity is again an issue to be addressed, but this is also a national problem and not unique to Ohio University. The Department is to be commended for increasing the diversity of graduate students over the past few years: over the past 7 years 40% of the graduate students have been female.

B. Does the graduate curriculum provide an adequate background to pursue discipline-related careers following graduation?

Most graduates from the MS program find employment either in the petroleum industry or in environmental fields. The self-assessment document does not provide quantitative data in this regard, but the document does note that most graduates self-report a high degree of satisfaction with the program with respect to finding employment in their field.

C. Does the program provide adequate mentoring and advising to students to prepare them for discipline-related careers?

Again, the self-assessment document does not provide quantitative data in this regard. However, it appears that mentoring of graduate students is of very high quality if measured by the number of graduate students who attend and present their research at national conferences and publish with their faculty mentors in peer-reviewed journals.

D. Are the resources and the number of and distribution of faculty sufficient to support the graduate program?

The number and distribution of faculty is currently sufficient to support the graduate program, but recent and impending losses of Group I faculty members will place increasing pressure on the remaining faculty with regard to teaching and mentoring of graduate students.

E. Does the program offer appropriate financial support to graduate students?

The stipends offered to graduate students in the Department are on par with national averages in geoscience graduate programs, and the number of GA positions is adequate given the number of Group I faculty. The Department is to be commended once again for its strong alumni relations program, as it is alumni donations that support student travel for research and professional meetings.

F. Is teaching adequately assessed?

Graduate success is assessed by the quality of student theses, which, according to the external reviewer, is typical of similar geoscience programs around the country.

G. Are students able to move into discipline-related careers?

The self-assessment document does not provide quantitative data with regard to this metric. However, according to this document most students self-report a high degree of satisfaction with the program with respect to finding employment in their field.

4. Areas of Concern

Staffing: The most obvious area of concern is the continued sustainability of the high quality of staffing that has been true for the Department of Geological Sciences at Ohio University up until now. Given that there is the expectation that the department will lose 2 faculty members within months, and that they have already lost faculty since the last 7-year review, replacement of high quality faculty must be the number one concern. The current team of Group I tenured faculty have worked hard to sustain high quality support for both undergraduate and graduate instruction. In addition, the resumes included in the self-study indicated high level publishing and research. For this to continue, investments in hiring quality faculty are critical.
Diversity: At a University that prides itself on its level of diversity and inclusion, the Department of Geological Sciences must do better in these areas. Historically, gender diversity has been easier to achieve than racial diversity. Now the issue is, can this continue or be improved? Another concern is diversity of the student body in the department.
Facilities/Equipment: According to the External Reviewer, "The laboratory and teaching spaces are adequate at the present time for the size of the Department." On the other hand, these facilities are becoming out dated. Therefore, it is fortunate that the building (Clippinger) is scheduled to be renovated and renewed in the very near future.
Service: Service to the profession is obvious in the resumes of the Geological Sciences faculty. However, service to the University and Community is less obvious. It may be there and undocumented, but the faculty need to step it up and do more. This is most likely if new faculty resources are hired.
Research/External Funding: According to the External Reviewer, "compared to peer M.S. granting departments, the amount of overall external grant funding is one of the weaknesses of the Department." At the same time, the current faculty have been very productive with research and publications, as indicated by their resumes.
Budget: Ohio University has faced significant budget reductions in many areas. The Department of Geological Sciences is no exception. However, this department cannot fulfil its responsibilities without additional funding. The department is fortunate to have the support of its alumni or its financial situation would be much worse.

5. Recommendations.

Staffing: The Department of Geological Sciences currently has 9 full time faculty members, 2 of whom are leaving after next semester. According to the External Reviewer, the department "needs to be able to maintain a minimum of 10 Group I faculty with the opportunity to supplement its teaching capacity with Group IV faculty as needed." This department has several undergraduate and graduate programs which require offering numerous courses, which they will be hard-pressed to do without additional teaching resources.
Diversity: Improving the diversity of both students and faculty is often facilitated by targeted programs. One approach which has been successful for other departments on campus involves building relationships with high schools in underserved areas. Sometimes prospective students are invited to campus in the summer before their senior year. Relationships can be developed with faculty members and students build positive expectations with Ohio University prior to applying. Another approach which is often effective in recruiting faculty involves placing advertising in outlets that specifically target either women or minorities. A further action could

involve having relationships with faculty at historically black universities. When this has been done, it is possible to specifically recruit for faculty at these locations.
Facilities/Equipment: Fortunately, there are already renovations planned for Clippinger. In this context, the External Reviewer suggests that, "it is essential that the space allocated to the Department of Geoscience be adequate for not only the teaching and laboratory requirements of the current faculty, but for projected growth of the Department." If the Department is going to maintain its well-respected position among peer institutions, it must continue to offer students and faculty the best possible facilities, equipment and laboratory technology.
Service: Improving the service profile of the Geological Sciences Department, while a very desirable outcome, will require a concerted effort, given the multiple demands already placed on the time of members of the department. The External Reviewer recommends developing increased interdisciplinary courses and programs; we would like to specifically recommend that the department engage in the environment studies programs offered at Ohio University. If the department wishes to be actively involved in programs that matter to the university at large, this may be an excellent way to accomplish that.
Research/External Funding: With external funding sources increasingly difficult to obtain it is remarkable that the Geological Sciences department has a strong, supportive relationship with its Alumni. In addition to depending on the Alumni, there are additional funding opportunities, as identified by the External Reviewer.
Budget: There are several opportunities to generate funds as the Department moves forward. Possible "new hires" could work in areas where funding is more available that current faculty.

6. Commendations.

Creative Pedagogical Development: The Faculty of the Geological Sciences Department is to be commended for creatively developing On-Line courses to help bring the process of scientific inquiry to more students throughout the Ohio University system. In our view, the Department is perilously short staffed and benefits greatly from the creativity of its faculty in developing courses and programs at the undergraduate and graduate levels that take advantage of the diverse specialties of faculty members.
Strong Diversity of Specializations: Further, the Faculty of the Geological Sciences Department are credentialed in diverse specializations and hold degrees from prestigious universities. They have a history of recruiting high quality faculty to fill critical positions.
Student Quality: The students who participate in both graduate and undergraduate programs are of very high quality. They speak highly of the quality of instruction and mentoring they receive. In addition, the faculty speak highly of the level of thought exhibited by, and the research conducted by the students.

7. Overall Judgement: Is the program viable as a whole?

In agreement with the external reviewer, it is our judgement that the Department of Geological Sciences is strong and viable. The Department has a quite strong undergraduate program that successfully fulfills its general education mission and maintains a healthy number of majors who self-report a high degree of satisfaction with the program upon graduation. The quality of the undergraduate program is also reflected in quantitative measurements of student success. The graduate program is especially strong, viable and sustainable. The program has a national

reputation for excellence and maintains a healthy number (about 20) of graduate students who are active in their field professionally, measured in high rates of presentations of research at professional meetings and publications with faculty mentors in peer-reviewed outlets. The Department is to be commended for increasing the diversity of the graduate student body with regard to gender over the past few years. Graduate student alumni also self-report a high degree of satisfaction with the program upon graduation. The high quality of both the undergraduate and graduate programs is a function of the hard work, dedication and quality of the Department's faculty, who are excellent teachers, mentors and researchers, as evinced by the number of publications and external grants as reported in the self-assessment document. With regard to available space, equipment and resources, the Department has managed to maintain a level of excellence in teaching and research in spite of the loss of four Group I faculty members and aging physical infrastructure in Clippinger Laboratories. Proactive and innovative curricular changes (such as development of on-line courses and curricular restructuring) have succeeded in meeting some of the challenges resulting from the loss of faculty. And planned renovations and expansions to Clippinger should alleviate many of the concerns with regard to space and aging facilities into the future.

Department of Geological Sciences
College of Arts and Sciences
Ohio University

External Review Report

November

Scott E Ishman

EXECUTIVE SUMMARY

The Department of Geological Sciences' mission statement has it serving multiple needs. It provides "students of all disciplines with an introduction to problem solving, critical thinking, and basic [scientific] concepts". The department delivers the knowledge and skills to its undergraduate and graduate majors necessary to advance into either a professional career or further academic study. And the department has a role in university, professional and community service.

At Ohio University I have found a dedicated and talented geoscience faculty whose mission is to provide all students with quality instruction, and geoscience undergraduates and graduates with mentoring and experiences to be successful and contributing citizens of their communities, states and nations. This report serves as an external evaluation of the Geological Sciences Programs.

INTRODUCTION

At the request of Dr. Gregory Springer, Chair of the Department of Geological Sciences, the external reviewer conducted an external review of the Department of Geological Sciences at Ohio University. The Department of Geological Sciences 7 Year Self Study was provided and reviewed that included the self-assessment of the Faculty, Undergraduate and Graduate Educational Quality, Research, Scholarship, and Creative Activity, and Service. The external reviewer visited campus on November 8 and 9, 2017 during which time he met with the faculty, staff, undergraduate and graduate students, Interim Executive Vice President and Provost, Dean of the College of Arts and Sciences, and internal reviewers

The Department of Geological Sciences faculty are committed to the education and success of all their students. They are able to provide a sound, fundamental geoscience education that prepares their students for both professional careers and advanced studies. The faculty promote a culture of inquiry and productivity through their own research and publications. They have been resilient and proactive to pressures in a climate of diminishing budgets and attrition of full time faculty. Following is an assessment of the strengths and challenges found as they related to the major questions provided to the reviewer.

ASSESSMENT

1. The program as a whole:

a. Is the current number and distribution of faculty sufficient to carry out the broad overall mission of the Department (Teaching; Research, Scholarship and Creative Activities; Service).

The current number of Group I faculty (9) is sufficient to carry out the overall mission of the Department. However, this has been accomplished through proactive and creative curriculum development and adjustments. The Department has developed a number of Tier II course offerings as on-line courses to fulfill its obligations to non-majors/general education. This is a major accomplishment for a geoscience department. Nationally, there are very few geoscience departments with on-line offerings so the Department should be commended for their efforts. The Department has been able to maintain sufficient course offerings for undergraduate majors and graduate students to allow them to make normal progress and graduate with exceptional time-to–degree rates (graduate student avg. 2.4 yrs.). The assessment of their success as measured by 1st year retention (avg. ~87%), course completion (avg. 97.6%), and placement of students into professional positions and/or graduate programs is also exceptional.

b. Is the level of the Department's RSCA appropriate for the program given the size of the faculty and the resources available to the Department? Is the Department's level of external funding at an appropriate level?

The Department has a good record of research productivity for the number of faculty, their workload (40-20-20) and having an M.S. program. Their publication record is commensurate or better than peer programs with most of the Group I faculty averaging >2 publications per year. Also exemplary is the number of students who are authors/co-authors on peer reviewed publications. A majority of the faculty and many of the graduate student present their results at national and international professional meetings providing the Department and University with broad exposure. One area of concern is the generation of external grants. The Department falls short on the generation of research dollars with a 7-year total of ~$1.3M with some peer departments averaging $500K to $1M annually. An increase in grant production will improve the Department's research mission by increasing indirect revenue generation and ability to provide additional GA lines through research assistantships.

c. Is the level of service, outside of teaching, appropriate for the program given its size and the role that it plays in the University and broader communities it interacts with? Is the Department able to fulfill its service mission?

The service expectations for academic units across the country have grown considerably the past 5 to 10 years. These growing expectations have been accompanied by decreasing budgets and faculty numbers. The Department has experience both of these and still meets its service mission. However, the Department service contribution to the University and community could be improved, and would result in increased visibility and recognition for the Department.

d. Does the Department have an appropriate level of financial resources, staff, physical facilities, library resources, and technology to fulfill its mission?

The reduction of financial resources from the University and reduction in faculty have impacted the Department in several areas. Student opportunities have been reduced, in particular are the offerings of field experiences, including the capstone Summer Geology Field Camp. These activities are integral to any geoscience program and by diminishing these opportunities the quality of education and ability to recruit good undergraduate students is a concern. Financially the Department has been very fortunate in having very strong alumni support. The physical facilities and technology are appropriate for the current Department; however, the condition of the physical facilities is inadequate and outdated. The technology for teaching is adequate but the research technology (analytical equipment), although adequate could be updated.

2. Undergraduate Program:

a. Is the Department fulfilling its service role, adequately preparing nonmajors for future coursework and/or satisfying the needs for general education?

The Department has done a commendable job serving non-major students. As mentioned previously, the development of a number of Tier II course offerings as on-line courses to fulfill its obligations to non-majors/general education is a major accomplishment for a geoscience department. Nationally, there are very few geoscience departments with on-line offerings so the Department should be commended for their efforts.

b. Is the program attracting majors likely to succeed in the program? Is the number of majors appropriate for the program? Is the program attracting a diverse group of students?

The Department has done a very good job attracting students capable of achieving success in the Program. They should be commended in their ability to recruit students from their general education courses into the Geosciences Program. The range in 7 year undergraduate major enrollments from 68 to 90 is average to above average compared to peer departments. The fluctuations in major enrollment numbers is cyclic coinciding with cycles in the fossil fuels industry. This is typical in most geoscience/geology departments with the exception of the R1 institutions in oil producing states. The diversity of the major student population is consistent with peer institutions with Caucasian males the largest demographic. However, the increased number of female majors is consistent with national trends. The low number of minorities in the Department is concerning but not out of the ordinary. It is a national trend as well, so much so that the NSF has sponsored a number of workshops to specifically address the lack of minorities in the earth sciences.

c. Does the undergraduate curriculum provide majors with an adequate background to pursue discipline-related careers or graduate work following graduation?

The success of undergraduate students is not quantified; however, the 7-year self-study indicates a ~90% success rate in graduates attaining employment in their discipline or acceptance into a

graduate program. The role the alumni advisory board has assumed in monitoring the quality of the undergraduate program through their tracking is commendable.

d. Are the resources and the number of and distribution of faculty sufficient to support the undergraduate program?

The current number and distribution of faculty is sufficient to support the undergraduate program as a traditional geoscience program. They are able to provide the foundational courses for advancement to either entering the workforce or continuing to a graduate program. However, with the impending reductions in Group I faculty due to retirement they will fall below the number of and distribution of faculty to support the program as needed. The current space and equipment resources are adequate to support the program but they are outdated and need renovation. The primary reason the Department has financial resources adequate to support the program is due to subsidies provided by its alumni.

e. Are pedagogical practices appropriate? Is teaching adequately assessed?

The Department has advanced its pedagogical practices since its last review by developing 7 on-line courses and developing a flipped class format in GEOL 2210. Other practices include integration of co-curricular activities into the curriculum. One recommendation is to incorporate internship opportunities into the curriculum to encourage students to get the added benefits of these experiences. Another recommendation is providing more undergraduate research opportunities, either informally or formally. However, this would require maintaining at least the current level of Group I faculty in the Department.

The Departmental teaching performance is adequately assessed. The quality is evident in the student outcomes and very positive responses given by undergraduate students interviewed by the external reviewer.

f. Are students able to move into to discipline-related careers and/or pursue further academic work?

The success of undergraduate students is not quantified; however, the 7-year self-study indicates a ~90% success rate in graduates attaining employment in their discipline or acceptance into a graduate program.

3. Graduate Program:

a. Is the program attracting students likely to succeed in the program? Is the number of students appropriate for the program? Is the program attracting a diverse group of students?

The M.S. Program (thesis) is strong and thriving. It has an adequate number of students compared to peer programs. The consistency of the graduate program average annual enrollments of 20 students is acceptable and understandable due to the number of GA appointments supported by the department. With the addition of the new Professional M.S. degree, expectations should be an overall increase in graduate enrollment; however, caution

should be taken to prevent concurrent enrollment decreases in the traditional M.S. degree. The Department has had the luxury of maintaining a level of quality graduate students through its national reputation of providing a solid M.S. degree. The Department should be commended on its time-to–completion of its M.S. students with an average of 2.4 years to degree. This is exceptional for a M.S. thesis degree program in geosciences. The student racial diversity in the graduate programs is also a concern but typical of peer programs. However, their gender diversity is commendable with females making up 40% of the 7-year average of graduate students.

b. Does the graduate curriculum provide an adequate background to pursue discipline-related careers following graduation?

The Department has no quantitative data to assess this metric. However, the 7-year self-study indicates that graduates from the M.S. program self-report "high satisfaction with the program and have very positive outcomes in entering the workforce or academia." The primary fields of employment for their M.S. graduates is in the environmental field and petroleum industry as is typical.

c. Does the program provide adequate mentoring and advising to students to prepare them for discipline-related careers?

The faculty do an exceptional job mentoring and advising their graduate students. This is born out on their time-to-degree, number of graduate students who are authors/co-authors on peer-reviewed journal articles, and attend professional meetings. These activities are all promoted and supported by the Department, faculty advisors, and alumni, and result in placement either in discipline-related careers or as Ph.D. students. The Department has also made efforts to improve graduate student success by expanding the role of the graduate coordinator, providing additional orientation activities, and increased communication of opportunities to the graduate students.

d. Are the resources and the number of and distribution of faculty sufficient to support the graduate program?

Currently the number of faculty is adequate to support the M.S. programs. However, the impending loss of 2 Group I faculty without replacement will make the department's ability to support the M.S. programs unsustainable. The M.S. programs require faculty who can mentor, as well as deliver a diverse number of specialty courses for the students to achieve success. The current faculty numbers provide enough upper level courses for the graduate students to attain the required number of credits, but in some instances, impedes their progress due to the frequency and timing the courses are offered. This will be exacerbated with further attrition of Group I faculty.

The department has the resources, in number of GA positions, to support its graduate students. This was diminished somewhat with the termination of the Graduate Research Scholarship (GRS) program. However, the alumni have provided resources to help support the graduate program. Increased grant activity could also create added opportunities for additional GA positions.

e. Does the program offer appropriate financial support to graduate students?

The Department offers financial support to its graduate students in multiple ways. It provides GA positions. The number of GA positions is adequate for the number of Group I faculty but could increase. As mentioned in the previous section, the loss of the GRS program reduced financial support the Department was able to provide. The initiation of the competitive summer research stipend by the Department is likely one factor responsible for the graduate student success and time-to-completion of its graduate students. The Department also provides financial support for student travel to conduct field work and attend professional meetings, critical for the professional development of the students. The budget for student travel support is supplemented by the generous giving of the Department's alumni.

f. Is teaching adequately assessed?

The assessment in teaching is born out through course evaluations, but more importantly the quality of the final thesis and thesis defense. These are typical assessment instruments used by geoscience graduate programs across the country.

g. Are students able to move into discipline-related careers?

Although not quantified, the 7-year self-study indicates that graduates from the M.S. program self-report "very positive outcomes in entering the workforce or academia."

4. Areas of concern.

Staffing: The greatest area of concern for the Department of Geosciences at Ohio University is the attrition of Group I faculty. Currently, with a faculty of 9 Group I tenured faculty, the Department is able to maintain its quality of teaching and research at the undergraduate and graduate levels. The loss of 2 faculty since the last assessment and impending loss of 2 additional in 2018 will result in the Department being unable to meet its obligations to its students and the University.

Diversity: Gender and racial diversity in the faculty ranks of the Department are a concern. Although racial diversity is a general challenge to STEM fields, gender diversity in the faculty ranks is something that can be addressed. Similarly, student diversity is a concern, although gender diversity in the student population is adequate, both areas could be improved.

Facilities/Equipment: The Department of Geological Sciences is housed in Clippinger Laboratories. The laboratory and teaching spaces are adequate at the present time for the size of the Department. However, the facilities and equipment are becoming outdated and in desperate need of renovation/replacement.

Service: Although it is understood that the reduction in faculty numbers has increased the demands to fulfill the mission of the Department, teaching, research and service, it is important for the Department to increase its role in service. Currently the faculty are active in professional

service but the presence of the faculty on University committees and in the community, is very limited.

Research/External Funding: The Department does a commendable job producing peer-reviewed journal articles for its size. However, compared to peer M.S. granting departments, the amount of overall external grant funding is one of the weaknesses of the Department.

Budget: Reduction in the University allocated budget to the Department further erodes the ability of the Department of fulfill its mission to the students, University and community.

5. Recommendations.

Staffing: The attrition of Group I faculty has got to stop. In order for the Department to best fulfill its mission to its students, the University and the community it needs to be able to maintain a minimum of 10 Group I faculty with the opportunity to supplement its teaching capacity with Group IV faculty as needed. However, the addition of Group I faculty should be done with a strategic plan for the Department in place. The recommended level of faculty will provide the teaching and mentoring capacity required to successfully sustain the undergraduate and graduate programs.

Diversity: To increase gender and racial diversity in the Department, it is recommended that when given the opportunity to advertise that ads be placed in gender and race specific publications. Diversity recruitment cannot be organic but must be aggressive in order to even stand a chance at being successful. This holds true for both faculty and student recruitment.

Facilities/Equipment: The facilities and equipment require renovation and updating. With the planning of the addition of a new wing and renovation of Clippinger Laboratories it is essential that the space allocated to the Department of Geoscience be adequate for not only the teaching and laboratory requirements of the current faculty, but for projected growth of the Department. The renovation and expansion plans should also include upgrades to teaching and laboratory technology and equipment.

Service: The Department of Geosciences needs to have a greater presence on campus and in the community. Efforts need to be made to have greater participation in the campus decision making process. The Department is advised to make a greater effort in developing interdisciplinary courses/programs. A greater effort in participating in the themes initiative is also recommended. It doesn't look like the Department has much interaction with the Ohio Valley Museum of Discovery, which could provide an excellent opportunity to develop some community programming and relations at little cost.

Research/External Funding: The declining availability of research dollars and funding success rates makes increasing grant productivity difficult. By becoming involved/initiating interdisciplinary programs new funding opportunities will become available, some from non-traditional sources or for non-traditional activities. Increased external funding generation will also help offset some other budgetary shortfalls of the Department.

Budget: Although state allocations are generally out of the control of the University and Department, the allocation of University funds, depending on the budget model, can be somewhat influenced by the Departmental contributions made to the University and the University activities in which it participates. Further development of alumni relations can lead to further alumni giving. Increased external funding generation will also help offset some budgetary shortfalls of the Department and provide additional revenue.

6. Commendations.

Teaching/Mentoring: The Department has done an excellent job fulfilling its teaching and mentoring missions to the students of the University, despite the staffing and budgetary challenges it has faced. This is a testament to the quality of the faculty in the Department and their dedication to the students and the Department. The faculty have worked collaboratively and collegially to address the budgetary and staffing challenges in ways that have not compromised the quality of education delivered to the students. The unwavering commitment of faculty to their students was a message delivered by both the undergraduate and graduate students.

Staffing: The Department is commended for its initiative to form a working group that included alumni, faculty members and an external consultant that produced a strategic plan for the Department. This plan includes changes in curriculum and programs that will be used to purposefully direct future hiring decisions.

On-line Courses: The development of a number of on-line courses by the Department to help meet its mission of non-major undergraduate education at Ohio University is commended. This is commendable because it is atypical for a geoscience/geology/earth science department to have any, if not as many, on-line courses as the Department of Geosciences at Ohio University. The development and delivery of the on-line courses was a response to a need to maintain its teaching mission to the University with decreasing faculty.

Student Enrollment/Quality: The Department has done a commendable job recruiting and retaining quality undergraduate and graduate students. This is an indication of the quality of both the undergraduate and graduate programs and the faculty who deliver the courses. The undergraduate and graduate programs have been able to maintain enrollment numbers consistent with their peer institutions.

Alumni Relations: The Department has done an excellent job involving their alumni in the academic mission of the Department. The Geological Sciences Alumni Board is very active in advising the Department and providing support for various Departmental functions.

7. Overall judgment: Is the program viable as a whole?

Currently the Department of Geosciences at Ohio University is viable and sustainable. This includes its undergraduate and graduate programs. The quality of the Department of Geological Sciences' academic programs is a result of a strong faculty. Overall enrollment in the undergraduate programs is commendable and the graduate program average annual enrollments

of 20 students is acceptable. With current facilities and equipment adequate to support the number of faculty and students in the programs, proper planning of the renovation and expansion of Clippinger Laboratories should provide the Department with adequate facilities into the future. The Department has a strong relationship with its alumni and should continue to foster such.

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Date: January 9, 2018

TO: David Ingram, Program Review Committee

FROM: Robert Frank, Dean, College of Arts and Sciences

RE: Seven-year review of Geological Sciences

I am responding to the 2017 program reviewers' report for the Department of Geological Sciences.

The report correctly identifies the many ways that the department is meeting its mission in undergraduate education, graduate education, research and service. The faculty have responded to opportunities for innovation and collaboration within their curricula with creativity and a willingness to acknowledge the changing landscape of higher education. Departmental leadership has been proactive to meeting the challenges of the present and thinking about the future. Outreach to alumni has been outstanding! A series of retirements and resignations provides the department with the opportunity to re-shape and revitalize its future directions, and I look forward to working with them to implement a new vision that supports a revised curriculum and fulfills and research mission of the department.