



January 2, 2019

Daniel A. Reed
Senior Vice President for Academic Affairs
205 Park Bldg.
Campus

RE: Graduate Council Review
Department of Geology and Geophysics

Dear Vice President Reed:

Enclosed is the Graduate Council's review of the Department of Geology and Geophysics. Included in this review packet are the report prepared by the Graduate Council, the Department Profile, and the Memorandum of Understanding resulting from the review wrap-up meeting.

After your approval, please forward this packet to President Ruth Watkins for her review. It will then be sent to the Academic Senate to be placed on the information calendar for the next Senate meeting.

Sincerely,

David B. Kieda
Dean, The Graduate School

Encl.

XC: Thure Cerling, Chair, Department of Geology and Geophysics
Darryl P. Butt, Dean, College of Mines and Earth Sciences

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The Department of Geology & Geophysics

Strength of the faculty was commended. Recent recruiting success has led to a bimodal age distribution among faculty, bringing up the need for proactive mentoring as well as the importance of strategically building on the legacy and shared resource development of senior faculty members. Contributions the Department makes to cross-disciplinary research and education were lauded. Degree programs are successful, with certain areas for improvement identified.

The Graduate School - The University of Utah

GRADUATE COUNCIL REPORT TO THE SENIOR VICE PRESIDENT
FOR ACADEMIC AFFAIRS AND THE ACADEMIC SENATE

March 26, 2018

The Graduate Council has completed its review of the **Department of Geology and Geophysics**.
The External Review Committee included:

Robert S. Anderson, PhD
Department of Geological Sciences
University of Colorado, Boulder

Joel D. Blum, PhD
JD MacArthur Chair and AF Thurnau Chair
GJ Keeler Distinguished University Professor
Department of Earth and Environmental Sciences
University of Michigan

Lisa Tauxe, PhD
Distinguished Professor of Geophysics
Professor, Geosciences Research Division
Scripps Institution of Oceanography
University of California, San Diego

The Internal Review Committee of the University of Utah included:

Benjamin C. Bromley, PhD
Professor and Chair
Department of Physics and Astronomy

Jan L. Christian, PhD
Professor
Department of Neurobiology and Anatomy

Eric R. Pardyjak, PhD
Professor
Department of Mechanical Engineering

This report of the Graduate Council is based on the self-study submitted by the Department of Geology and Geophysics, the reports of the external and internal review committees, and a joint response to the external and internal reports from the Chair of the Geology and Geophysics Department and Dean of the College of Mines and Earth Sciences.

DEPARTMENT PROFILE

Program Overview

The Department of Geology and Geophysics (hereinafter the "Department"), as of the time of the site visits, consists of 24 tenure-line faculty (21 full-time equivalent) and 12 career-line faculty (3 teaching faculty and 9 research faculty). Teaching and scholarly activities are organized under four topical areas: Solid-Earth Processes and Dynamics, Earth Resources and Exploration, Surface Processes and Environment, and Geologic Time and Evolution. The Department offers BS degrees in Geosciences (with emphases in Geology, Geophysics or Environmental Geoscience), Geological Engineering, and Earth Science Teaching. The Department offers master's and doctoral programs in Geology, Geophysics (including an MS in Science Teaching in Earth Science), and Geological Engineering. Research activity in the Department is high, with a significant proportion of faculty securing grants regularly. The Department culture is collegial and the Department has benefited from excellent leadership from former and current chairs.

The Department has responded to many of the recommendations from the previous program review in 2011, including: investing in strategic hires, creating an endowed chair to help with salary compression, hiring a new academic advisor, increasing peer mentoring opportunities for students, and making recruitment of female undergraduates a priority. Funding for staffing and maintenance of core facilities continues to be a challenge for the department.

Faculty

As stated previously, the Department has 24 tenure-line faculty (21 full-time equivalent) and 12 career-line faculty (3 teaching faculty and 9 research faculty). The internal review reports that, "This represents significant growth and turnover in the department since the last review, including 12 new hires in the last seven years. Two of the new tenure-line hires are females, and women now account for 25% of faculty. This is on par with the national average in Geoscience departments. Three of the tenure-line faculty are of Asian ancestry and three research faculty are of Asian, Hispanic or Arabic ancestry. Current faculty diversity reflects that of the faculty applicant pool for positions filled since the last review and also reflects that of Geoscience departments in general."

The external review committee assessed the faculty as strong, with diverse expertise. They noted the bimodal age profile of faculty, but also stressed that "the older cadre of faculty, among whom several are more than 60 years old, remains strong with still-active to thriving research programs." And they further commented that "the newly hired faculty, many of whom have been at UU for less than 10 years, are vibrant and excited about both research and teaching." Yet, clearly the bimodal age distribution may present a challenge in terms of departmental leadership in the upcoming years and the external reviewers

advised that steps be taken now to ensure strong leadership in the coming years. The external review committee also suggested that the department make a better effort to include non-tenure-line faculty in the life and governance of the Department.

The faculty also received praise for funding and publications in the external reports. The internal review committee notes, "Geology and Geophysics faculty are above the national median in awards, citations and published articles but are slightly below the national median in grant dollars and number of grants per faculty. This may reflect the relatively recent and rapid addition of new junior faculty. The majority of faculty, however, are publishing regularly in peer-reviewed journals, and have external funding." The internal review committee also notes the high service activity of the faculty and that teaching loads are not equitable.

A need for more formal mentoring processes emerged from interviews with junior faculty. Given the importance of cultivating leadership in the department, extending mentorship opportunities to mid-level faculty is likely also important.

Students

The Department seeks undergraduate students through multiple avenues. The Department's diversity with respect to female and underrepresented minority enrollments has averaged 35% and 10%, respectively. The internal review committee claims, "There is an appropriate gender balance among students. The number of underrepresented minority (URM) students is low, but the department has had some success in recruiting URM students recently and numbers are comparable with nationwide averages for Geoscience programs." Recruitment efforts (including efforts to increase diversity) include offering scholarship opportunities and an NSF-funded collaboration with Salt Lake Community College and Weber State University to create a mentored pipeline for transfer students. The Chair's response letter reports that the college-wide Advising Center has a focus on outreach and that they are also working with the Admissions Office to increase diversity.

Reviewers found the graduate students to be high quality, dynamic and engaging, and remarked that they progress through the program in good time. However, the Department is faced with turning away highly qualified graduate students due to a lack of funding for Teaching Assistantships. These rejected students are both national and international applicants.

Although the external review committee notes that the graduate program is overall strong and thriving, there is a problem with advising. To correct this problem the external review committee offered five concrete suggestions: yearly committee meetings with sign-off by student, advisor, and committee; increased effort to back-fill information from other disciplines in order to perform high-end, cross-disciplinary research; exposure to non-academic and non-industry career options; an introductory activity for first-year graduate students each year; and more activities in general to weave graduate students and the Department together. The Department has many activities now planned (or underway) that should promote interactions among students and provide broad opportunities to bring together students, faculty, and staff.

Postdoctoral fellows are recruited and mentored by individual faculty. Ensuring consistent access to additional mentoring resources is a point where improvements could be made; capitalizing on resources that exist, whether at the departmental, college or university level, seems like a first important priority.

Curriculum

The Department's curriculum is vast, including the offering of three BS degrees, four MS degrees, and three PhD degrees. The Department offers a wide variety of courses for students to pursue these degrees, with 170 courses on the books. The external review committee noted that the undergraduate curriculum is too "rock based" but that they see the Department making strides towards including more of the diversity of the field. The external committee expressed some concerns over planned changes to the curriculum that suggest this revamping process should be approached carefully. The Chair's response indicates a commitment to evaluating the effectiveness of any changes and being willing to revise if needed. Certainly, striving to eliminate redundancy and optimize class sizes are very reasonable and timely goals.

The external review committee took issue with the graduate curriculum, stating: "There doesn't seem to be a coherent graduate curriculum at all. There also seems to be a lack of graduate course offerings and inconsistency as to when they are offered. Teaching assistants are also not receiving adequate instruction in teaching pedagogy or in classroom management." The internal review committee did not note this problem with the graduate curriculum but did state that they received feedback from graduate students that technical courses such as programming, statistics, and instrumentation were not adequately provided. While graduate certificate programs seem to knit together prescribed curricular choices and professional development, it is important to ensure students throughout the Department have a strong program of study.

Program Effectiveness and Outcomes Assessment

The Department has a successful track record of graduating most undergraduate students within a five-year period and moving those students on to careers in the field and/or graduate school. It is noted by the internal review committee that the diversity of degrees offered by the Department makes it a little difficult to produce uniform assessments; however, they note the success of the four-step assessment model utilized by the Department. The external review committee notes that the Department has clearly made improvements in their efforts toward programmatic evaluation. However, the committee also would like to see more concrete metrics to evaluate the teaching of the graduate programs, and both teams noted the general need to have a more robust feedback loop to improve program effectiveness.

Facilities and Resources

Both the internal and external review committees note the state-of-the-art quality of the labs and facilities of the Department. The external review committee mentioned the successful "collaboration between two heavy-weight researchers, Thure Cerling whose primary appointment is in GG, and Jim Ehleringer whose primary appointment is in Biology. Together they are largely credited with establishing the field of stable isotope ecology and paleoecology, and both are now in the National Academy of Sciences. Their joint lab facility, called SIRFER, has been a key to the success of much research on campus." This facility, along with other resources, has helped drive a widespread reputation for the Department as a site of cutting-edge analytical facilities, yet the internal review committee points to a major problem with funding for technical positions, claiming: "There are significant departmental operating budget issues that include insufficient funds for staff... and non-personnel operations. The department has been quite successful securing endowment funding, competitive external funding, and running recharge facilities to close budget

gaps, but there is insufficient staff help to manage these accounts. Furthermore, the department operates millions of dollars of facilities without secure technical staff positions. Many of these facilities operate as recharge centers that rely on transient support and would benefit greatly from stable long-term support." It is recommended that the College Dean and upper administration revisit the returned overhead agreement, given the current expectation that the Department contribute substantially to start-up packages for new faculty. The external report concurs with this assessment and further underscores the need to hire tenure-track faculty who will be future leaders of specific analytical laboratories.

COMMENDATIONS

1. The Department building (Frederick A. Sutton Building) is well-designed and used intelligently.
2. The Department has a highly collegial environment that includes positive interactions between students, faculty, and staff.
3. Faculty at all levels are commended: the chair for his vision and for being an exemplary role model of excellence in research and collaboration, the junior faculty for their energetic contributions to the department mission, and the full faculty for their excellence in research quality and productivity. Teamwork among the faculty to address key issues was noted to be high.
4. The Department makes robust contributions to cross-disciplinary research and education via state-of-the-art shared resources and through close connections to the Global Change and Sustainability Center.
5. The Department has made strides in gaining more gender balance with the hiring of two women for new tenure-line positions.

RECOMMENDATIONS

1. The Department should establish a mentoring program for untenured faculty.
2. The Department should ensure that all graduate students are guided along a robust program of study with ample advising, mentoring, and community building.
3. The Department should reinvigorate strategic planning that capitalizes on their strength in cross-disciplinary research and the talents of new hires. Within this context, plans for future faculty hiring should be articulated, as well as pathways to increase diversity. An external advisory board would be very useful to strategic planning and other departmental efforts.
4. The Department should work to increase effectiveness of undergraduate student recruitment, including attracting more underrepresented racial and ethnic minorities.

5. The Department should investigate ways to increase administrative and technical staff support. For example, the College Dean and upper administration should revisit the returned overhead agreement, given the current expectation that the Department contribute substantially to start-up packages for new faculty. This presents a challenge to recruiting efforts and constrains other initiatives central to running the Department.
6. The Department should develop processes that seek to make faculty workload in teaching equitable, being protective of junior faculty.

Submitted by the Ad Hoc Committee of the Graduate Council:

Elisabeth E. Pankl (Chair)
Head, Undergraduate and Graduate Services, Marriott Library

Christopher A. Reilly
Associate Professor, Department of Pharmacology and Toxicology

Lien Shen
Associate Professor, Department of Film and Media Arts

Jane D. Hatter (Undergraduate Council Representative)
Assistant Professor, School of Music

College Name
All

Department Name
Geology & Geophysics

Program
All

Faculty Headcount

		2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
With Doctoral Degrees Including MFA and Other Terminal Degrees	Full-Time Tenured Faculty	15	16	14	16	18	18	16
	Full-Time Tenure Track	4	4	7	7	6	6	6
	Full-Time Career Line/Adjunct Faculty	5	8	7	5	9	9	8
	Part-Time Tenure/Tenure Track	2	1	1	2	1	1	1
	Part-Time Career Line/Adjunct Faculty	1	0	0	1	0	2	1
	Total	27	29	29	31	34	36	32
With Masters Degrees	Full-Time Tenured Faculty							
	Full-Time Tenure Track							
	Full-Time Career Line/Adjunct Faculty	0	0	0	1	1	0	0
	Part-Time Tenure/Tenure Track							
	Part-Time Career Line/Adjunct Faculty							
	Total	0	0	0	1	1	0	0
With Bachelor Degrees	Full-Time Tenured Faculty							
	Full-Time Tenure Track							
	Full-Time Career Line/Adjunct Faculty							
	Part-Time Tenure/Tenure Track							
	Part-Time Career Line/Adjunct Faculty							
	Total							
Total Headcount Faculty	Full-Time Tenured Faculty	15	16	14	16	18	18	16
	Full-Time Tenure Track	4	4	7	7	6	6	6
	Full-Time Career Line/Adjunct Faculty	5	8	7	6	10	9	8
	Part-Time Tenure/Tenure Track	2	1	1	2	1	1	1
	Part-Time Career Line/Adjunct Faculty	1	0	0	1	0	2	1
	Total	27	29	29	32	35	36	32

Cost Study

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Direct Instructional Expenditures	2,804,505	3,145,731	3,390,521	3,677,083	3,850,255	4,065,375	4,095,363
Cost Per Student FTE	11,063	11,381	12,421	15,113	15,058	16,081	16,568

FTE from Cost Study

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Full-Time	24	26	27	28	33	33	31
Part-Time	2	1	0	1	1	1	1
Teaching Assistants	1	1	1	1	1	1	1

Funding

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Total Grants	3,731,108	3,318,021	3,391,179	3,622,581	4,012,148	3,944,074	4,226,590
State Appropriated Funds	2,428,594	2,539,795	2,673,249	3,152,213	3,418,461	3,925,068	4,040,401
Teaching Grants	164,238	385,298	409,576	382,053	570,855	393,056	393,699
Special Legislative Appropriation							

Differential Tuition

Student Credit Hours and FTE

		2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
SCH	Lower Division	2,847	2,979	2,857	2,493	2,753	2,884	2,848
	Upper Division	2,715	3,006	3,278	2,807	2,733	2,836	2,885
	Basic Graduate	1,003	1,216	1,088	1,008	824	505	351
	Advanced Graduate	360	323	282	326	633	739	771
FTE	Lower Division	95	99	95	83	92	96	95
	Upper Division	90	100	109	94	91	95	96
	Basic Graduate	50	61	54	50	41	25	18
	Advanced Graduate	18	16	14	16	32	37	39
FTE/FTE	LD FTE per Total Faculty FTE	4	4	3	3	3	3	3
	UD FTE per Total Faculty FTE	3	4	4	3	3	3	3
	BG FTE per Total Faculty FTE	2	2	2	2	1	1	1
	AG FTE per Total Faculty FTE	1	1	1	1	1	1	1

Enrolled Majors

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Undergraduate Pre-Majors	31	34	29	22	24	21	17
Undergraduate Majors	132	141	149	132	118	130	132
Enrolled in Masters Program	57	66	55	63	43	36	19
Enrolled in Doctoral Program	23	26	20	23	33	44	47
Enrolled in First-Professional Program							

Degrees Awarded

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Undergraduate Certificate							
Graduate Certificate							
Bachelors	17	20	35	37	30	25	40
Masters	10	13	26	27	18	27	12
Doctorate	4	7	5	6	3	6	2
First-Professional							



Memorandum of Understanding Department of Geology and Geophysics Graduate Council Review 2017-18

This memorandum of understanding is a summary of decisions reached at a wrap-up meeting on August 23, 2018, and concludes the Graduate Council Review of the Department of Geology and Geophysics. Daniel A. Reed, Senior Vice President for Academic Affairs; Darryl P. Butt, Dean of the College of Mines and Earth Sciences; Thure E. Cerling, Chair of the Department of Geology and Geophysics; David B. Kieda, Dean of The Graduate School; and Katharine S. Ullman, Associate Dean of the Graduate School, were present.

The discussion centered on but was not limited to the recommendations contained in the review summary report presented to the Graduate Council on March 26, 2018. The working group agreed to endorse the following actions:

Recommendation 1: The Department should establish a mentoring program for untenured faculty.

A mentoring program is under development in which each junior faculty member will be assigned a senior faculty mentor. This assignment is arrived at with input from the junior faculty and with the broader understanding that mentorship from many sources is key. Chair Cerling is investigating the mentoring resources that already exist at the University to avoid duplication of effort. In this regard, there is an effort to reinvigorate the University's new faculty orientation that is likely to provide an important complement. There are also national resources, and one of the junior faculty participated in a special program run by the National Science Foundation (NSF) for new investigators in Earth Science disciplines. Creating a forum for peer mentoring to pass on knowledge gained by individuals and foster peer support is another way to bolster mentoring. Not all activities need to be formal and, along these lines, Dean Butt organizes social activities aimed at building community among junior faculty. Dean Butt also mentioned that Chair Cerling is a superb mentor to faculty in his department and, knowing that mentorship comes from a collective network, this is critical. Overall, strong mentoring of junior faculty is viewed as an important priority within the Department and College.

Recommendation 2: The Department should ensure that all graduate students are guided along a robust program of study with ample advising, mentoring, and community building.

A committee devoted to graduate affairs is tasked with developing a plan for graduate program improvements. Chair Cerling conveyed initial priorities of 1) improved tracking of milestone progress (including timely completion of the qualifying exam) and 2) regular committee meetings with a process for sign-off. These are not new requirements as they are largely already laid out in the departmental graduate handbook; however, they have not been consistently enforced. The committee, therefore, needs to create a process for enforcement and identify consequences when compliance lapses. Both students and faculty need to be fully informed of the expectations and consequences. SVP Reed noted that each department tailors their system of student tracking and that, in some cases, department faculty hold an annual meeting to look specifically at the progress and standing of individual students in the program; this could also be accomplished by the graduate affairs committee itself. The working group also discussed models where stipends, travel funds, or other aspects of program support are tied to timely completion of program milestones. Given the importance of this action item, Dean Kieda requested an update in one year on the committee's report and the new policies that emerge. As far as mentoring and community building, there are now many activities to support these objectives. The Department has a half-day workshop for new graduate students and this orientation was expanded to include a recreational activity (this year, a camping trip in the Uintas). The College also now offers a semester-long graduate student orientation course. Further, the College has launched the Inclusive Earth Club, led by graduate students and open to both undergraduates and graduates. This club has the goal of providing professional development opportunities, with an emphasis on important topics of inclusivity and diversity. The newly opened 'Epicenter' also provides a space for students to gather and access services such as career advising (in coordination with the central Career & Professional Development Center). These and other departmental and College initiatives provide an environment where it is hoped that a graduate student community will flourish.

Recommendation 3: The Department should reinvigorate strategic planning that capitalizes on their strength in cross-disciplinary research and the talents of new hires. Within this context, plans for future faculty hiring should be articulated, as well as pathways to increase diversity. An external advisory board would be very useful to strategic planning and other departmental efforts.

Through a series of meeting and surveys this past Spring, faculty were involved in identifying growth areas for the Department and, with these hiring priorities in hand, they are now trying to open a new search. A challenge has been securing adequate funding for start-up packages (see Recommendation 5). The report from external experts emphasized two points relevant to this recommendation. First, there is a bimodal age distribution of faculty; thus, a cadre of faculty central to the Department's operation and visibility will near retirement at once. Second, the Department has built an international reputation in particular areas and developed unique resource facilities that support research in these arenas. Since many of the senior faculty are the ones most tightly linked to these pioneering areas, searches that encompass these fields would

bolster established strength, provide continuity, and leverage current infrastructure. A third consideration was brought up by Dean Kieda, who pointed to analysis of the Department's funding portfolio as a tool that can help identify hiring priorities. In particular, research in the Department is currently supported primarily by NSF funding, whereas other sources, such as NASA, are absent. Often, a greater range of funding sources strengthens a program. The Chair felt that the current search, which is in geophysics, will be a step in broadening this portfolio; further analysis of funding data in Academic Analytics may be helpful. Finally, in an earlier response, the Chair and Dean had mentioned strategic planning more broadly using the National Research Council's Report on Research Questions for a Changing Planet as context. It will be important to consider all these angles as the Department formulates an overarching strategic plan and as future hiring priorities are continually evaluated.

The Department is taking very intentional steps in terms of improving faculty diversity. First, not just the search committee, but all faculty members are required to have diversity training to increase awareness of unconscious bias and other issues that influence hiring decisions. They also have a plan to bring in three senior faculty from other institutions, two of whom are women, to start the process of their next search. This serves both to educate departmental faculty on the field that is the focus of the search, and also provides the opportunity to find candidates for this position by networking with these speakers, who will have seen first-hand the great environment here. The group also discussed the possibility that national professional organizations may have mentoring networks for underrepresented minorities where information about this position could be distributed.

The group discussed both the advantages and the challenges of an external advisory board. Chair Cerling pointed out that the Department had such a board previously but it had not been self-sustaining through changes in departmental leadership and the process of starting one in a way that would be durable was daunting. Dean Kieda stressed that an advisory board should not be assembled until there is a clear vision of the needs that this group can address. There are certainly cases where an external advisory board, perhaps drawing from alumni, can provide extremely helpful feedback for curricular and program improvements. An external advisory board for the College is just being formed. While they will have a distinct agenda, this will still have a positive impact on the Department and it is possible that members of the College board might be able to address department-specific questions on an ad hoc basis. The Chair and Dean will consider options, keeping in mind that the upcoming 10-year celebration of the Sutton Building in Spring 2019 is an opportunity to reconnect with alumni and potentially draw them into service on an advisory board.

Recommendation 4: The Department should work to increase effectiveness of undergraduate student recruitment, including attracting more underrepresented racial and ethnic minorities.

The Department is taking a multifaceted approach to increasing undergraduate recruitment. They hold an annual open house, which has taken on increased momentum recently thanks in part to staff members of this event. It is hoped that this exposure, which includes a wide K-12 audience, will augment future

enrollment. The Department also has an NSF-funded initiative (GEOPATHS) to create a pipeline from Salt Lake Community College, and hopefully the connections and the groundwork laid will have persisting effects, although new sources of funding would be needed to keep the program ongoing. A current emphasis for recruitment has been to work strategically with Admissions. The College has also hired staff in the specific areas of recruitment and public relations and, in collaboration with the College of Science, there is a search underway for a diversity director. The College is also connected to ACCESS, a program on campus that supports women beginning their undergraduate studies in the sciences, and this is viewed as a successful mechanism to attract and support female students, often from underrepresented racial and ethnic groups. Initiatives described in Recommendation 2, such as the Inclusive Earth Club, are clearly also aligned with the goals of this recommendation as well. Finally, classes that attract current students to the major are also important. The Department currently offers ~4 such courses, with 40-120 students. Classroom size often dictates these limits, so it is worthwhile to seek opportunities to teach in larger spaces and potentially to take a collaborative approach with other departments in the College to introduce an even broader range of topics, using course themes that pique the curiosity of students.

Recommendation 5: The Department should investigate ways to increase administrative and technical staff support. For example, the College Dean and upper administration should revisit the returned overhead agreement, given the current expectation that the Department contribute substantially to start-up packages for new faculty. This presents a challenge to recruiting efforts and constrains other initiatives central to running the Department.

The College has provided increased support for administrative staff and has hired a College-wide grants specialist, but technical staff in the Department remain under-supported. The returned overhead that currently goes to the Department is almost entirely consumed by their IT needs. As a result, few funds are available to underwrite the portion of start-up that the Department and College are required to contribute, nor are they able to reward/incentivize research efforts of established faculty. The Vice President for Research, Andrew Weyrich, is currently looking campus-wide at the model for returned overhead. Further addressing the issues raised in this recommendation should be a priority at the College and Department level once changes to the returned overhead model are implemented.

Recommendation 6: The Department should develop processes that seek to make faculty workload in teaching equitable, being protective of junior faculty.

There have been substantive changes to the undergraduate curriculum, and the departmental Curriculum Committee is now tasked with making an ongoing plan for teaching assignments. The Chair noted in his response memo that different responsibilities of faculty members in areas outside of teaching need to be accounted for. The Chair may need to go through iterations of the plan with the committee as he modifies

Memorandum of Understanding
Department of Geology and Geophysics
Graduate Council Review 2017-18
Page 6

based on these other contributions, which in some cases may exceed the expected workload for service and/or administration. With regard to junior faculty, although the Chair felt that they are not over-burdened, this is an opportunity for the Curriculum Committee to make multi-year assignments that allow junior faculty to repeat teaching certain courses that they have put effort into preparing. While not all teaching needs to (or should) fall in this category, this is helpful in preventing teaching responsibilities from becoming overly burdensome. The disproportionately high number of 5000 level courses will be the next issue tackled by the Curriculum Committee. An important analysis is being performed by the Undergraduate Academic Advisor, who is examining current course choices. Preliminary inspection indicates that better definition of pathways through the major is required, and from this it may be possible to prioritize particular 5000-level courses. As many of the current 5000 level courses are under-enrolled and logical course progressions are not always followed, this overhaul appears to be vital to address during this academic year.

Dean Butt noted that the synergy in curriculum between departments in the College of Mines and Earth Sciences has dwindled over time and that he hoped to reinvigorate better coordination at a college level. This is a sensible priority for the Curriculum Committee. It is particularly relevant to Geological Engineering, but is likely to have a broader reach. The Department was commended in this review for its contributions to cross-disciplinary education. With this success comes the potential to be leaders or advisors in new initiatives, both within the College and in partnership with other units of the University.

This memorandum of understanding is to be followed by regular letters of progress, upon request of the Graduate School, from the Chair of the Department of Geology and Geophysics. Letters will be submitted until all of the actions described in the preceding paragraphs have been completed. In addition, a three-year follow-up meeting may be scheduled during AY 2020-21 to discuss progress made in addressing the review recommendations.

Daniel A. Reed
Darryl P. Butt
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