February 4, 2016

Vivian S. Lee
Senior Vice President for Health Sciences
5th Floor, CNC
Campus

RE: Graduate Council Review
        Department of Biomedical Informatics

Dear Vice President Lee:

        Enclosed is the Graduate Council's review of the Department of Biomedical Informatics. 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 David Pershing for his 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: Wendy Chapman, Chair, Department of Biomedical Informatics

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The Graduate School - The University of Utah

**GRADUATE COUNCIL REPORT TO THE SENIOR VICE PRESIDENT
FOR HEALTH SCIENCES AND THE ACADEMIC SENATE**

October 26, 2015

       The Graduate Council has completed its review of the **Department of Biomedical Informatics**. The External Review Committee included:

> George Demiris, PhD, FACMI
> Professor, Biomedical and Health Informatics
> School of Medicine
> University of Washington
>
> Cynthia S. Gadd, PhD, MBA
> Professor and Vice Chair for Educational Affairs, Dept. of Biomedical Informatics
> School of Medicine
> Vanderbilt University
>
> Graciela Gonzales, PhD
> Associate Professor of Biomedical Informatics
> Arizona State University

The Internal Review Committee of the University of Utah included:

> Ana S. Birkhead, PhD
> Associate Professor
> College of Nursing
>
> Robert S. MacLeod, PhD
> Professor
> Department of Bioengineering
>
> Norman J. Waitzman, PhD
> Professor
> Department of Economics

This report of the Graduate Council is based on the self-study submitted by the Department of Biomedical Informatics, the reports of the Internal and External Review Committees, and the Department Chair's and Senior Vice President/School of Medicine Dean's responses to the Internal and External Committee Reports.

DEPARTMENT PROFILE

Program Overview

The mission of the Department of Biomedical Informatics (hereinafter the "Department") is "to improve health outcomes through information systems for consumers and providers in both the private and the public sectors of healthcare and public health." The Department offers three different graduate programs leading to a certificate, master's degree, or PhD. The Department has active and ongoing relations with the University of Utah Health Sciences Center, Intermountain Healthcare, the Department of Veteran's Affairs Salt Lake VA Medical Center, and the Utah Department of Health and Health Insight (the Quality Improvement Organization for Utah, New Mexico, and Nevada). The Department also is establishing ties with industrial partners to support both its educational and research missions.

Over the past five decades the Department has had four Chairs: Dr. Homer Warner (1964 – 1996), Dr. Reed Gardner (1996 – 2005), Dr. Joyce Mitchell (2005 – 2012), and Dr. Wendy Chapman (2013 – present). Dr. Chapman and her administrative team appear to enjoy strong support of faculty and staff. In 2014 the Department moved to the University's Research Park to better accommodate its expanding student body, faculty, and staff.

Compared with other similar entities across the nation, the Department enjoys the organizational autonomy to leverage its resources and its reputation with potential partners across campus, across the region, and beyond. It has a significant teaching mission focused on graduate education and is considered a "pioneer" in the field of informatics education, having awarded its first PhD in 1965. Since then, it has produced more PhD and Master of Science graduates in this field than any other program in the country.

Faculty

Currently, the Department has 3 full-time tenured faculty, 7 full-time tenure-track faculty, 2 full-time career-line faculty, and 3 part-time tenure/tenure-track faculty. Admittedly, it is difficult to summarize and categorize the numbers of faculty, as individual commitments are mixed and reflect activities with other departments. The Department has instituted formal mentoring programs for junior faculty that include tracking and oversight of junior faculty's progress toward promotion and tenure.

Of concern is that faculty are expected to be at least 85% self-supported through grants and other external sources after three years. This lack of secure salary support creates unique vulnerabilities as grant support becomes more fragile. High-quality faculty could become less content with this lack of security and be recruited by other units or institutions with more supportive salary structures.

Similarly, a consistent topic of discussion among faculty and students is the differential tuition fee, which the Department charges its students in order to provide necessary program funding. Some faculty perceive this as a "tax" on them and their grants that is not required in other graduate programs. The Department is examining this issue and will compare practices with comparable institutions across the country.

Another concern is the perceived changes in the University's relationship with Intermountain Health Care (IHC) that has affected the ability of IHC faculty to obtain faculty appointments at the University. This has inhibited traditional collaborations between the two institutions and is resulting in missed opportunities for the Department.

Students

Since the last review in 2006, the Department has awarded 55 PhDs, 28 master's degrees, and 27 graduate certificates.

The admissions process is viewed as fair and transparent by students. Student enrollment remains robust since the last review, with 24 currently enrolled in the master's program (thesis and nonthesis) and 42 enrolled in the doctoral program. Recent enrollment trends indicate that these students commonly do not proceed directly from their undergraduate degree programs to graduate programs in the Department. Many continue to work part-time while enrolled in the program, and the diversity of their work experiences is considered a major strength of their educational experience.

Curriculum

The Department offers a graduate certificate, a thesis and nonthesis-based master's degree, and a PhD. All graduate students must maintain minimum enrollment thresholds from the time of their formal admission through completion of their program, unless granted an official leave of absence. The graduate certificate program, approved in 2006, requires 15 hours of informatics coursework, including one core BMI course. Three hours of coursework from outside the Department may be selected with faculty approval.

The curriculum is assessed continually by the curriculum committee. It is completing a comparative study of other well-respected biomedical informatics curricula across the country and has mapped the current coursework to contemporary informatics competencies.

The curriculum committee recently introduced "flipped classroom" features that incorporate online and in-person modules in some courses, which is consistent with current trends in graduate education. This development has been well-received by students and faculty. The committee is also exploring the feasibility of offering professional development courses that would focus on translational research, public health, and bioinformatics.

One noteworthy addition to the curriculum has been the creation of a course-only MS program, which offers an innovative and effective pathway for medical professionals to earn a degree in the discipline while maintaining their current medical career path. The Department is also exploring the establishment of a professional master's degree that could address a market need and also become an additional source of revenue.

Diversity

Faculty diversity is currently 30% women and 16% non-white. Since 2008, female representation in the student body has averaged 34%. However, recruitment efforts to attract more African-American, Hispanic, and Native American students have not been as successful.

In response to a recommendation from the external reviewers, Department administrators noted their agreement with the specifics of the recommendation and noted additional ongoing efforts aimed at increasing the diversity of the student body. These include targeted outreach activities to colleges and universities with significant enrollments of Hispanics, Native Americans, and African-Americans.

Program Effectiveness and Outcomes Assessment

Research productivity has attracted $36 million in grant funding, with a mix of internal and external sources. The goal of five publications per faculty FTE per year was exceeded in 2012 and was narrowly missed in 2013.

The operational pilot projects are initiatives that have enabled faculty and students to engage with operational components of the University of Utah Hospital. This not only enhances the Department's visibility, but also bolsters the research and service missions of the Department and provides multiple opportunities for research and collaboration across the university campus.

The student retention rate remains high, and employment outcomes in academia and industry remain strong, which is reflective of the program's academic rigor and sound reputation. The Chair is planning to initiate exit interviews with all students nearing the completion of their program.

Facilities and Resources

The FY 2015 budget is approximately $8.7 million, of which $1.5 million (17%) is derived from state funding. (This includes approximately $400,000 in differential tuition and fees charged by the Department.) In addition, the Department generates $4.7 million (54%) in contract and grant funding, $950,000 (11%) from Myriad Genetics royalties, and approximately $1.6 million (18%) from overhead funding, including Chair recruitment funds and small gift accounts. A major fiscal challenge will occur in 2016 with the conclusion of the income from Myriad Genetics royalties.

In 2014, the Department moved into facilities at University Research Park that centrally locate all faculty, staff, and students. In addition to meeting immediate space needs, the facilities should support and enhance collaboration and collegiality in all aspects of its mission.

The Department has successfully renewed its National Library of Medicine Biomedical Informatics Training Grant that provides support for pre- and postdoctoral trainees. This enables the Department to maintain its reputation as one of the top-ranked biomedical informatics graduate programs in the country.

COMMENDATIONS

1. Well-organized and cohesive Department leadership that appears to have the support of faculty and staff.

2. Excellent Department physical space and administrative support.

3. Sustained research productivity with a mix of internal and external sources.

4. Successful renewal of the National Library of Medicine Biomedical Informatics Training Grant.

5. Continuation of the Department's national reputation for academic excellence.

6. Initiation of formal mentoring programs for junior faculty.

7. Robust student enrollment, with a student body reflecting a diversity of work experience that enhances the academic and research environment.

8. Rich diversity of curricular offerings that reflect contemporary trends in graduate education

RECOMMENDATIONS

1. Continue efforts at increasing student diversity, including the pursuit of supplemental NIH funding and recruitment packages that will compliment future recruitment efforts to attract underrepresented minority students.

2. Enhance efforts to identify research and other collaborative opportunities locally, nationally, and internationally that can capitalize on the Department's expertise and reputation and enhance Department revenues.

3. Explore the impact of the low level of faculty salary support on faculty hiring and retention.

4. Clarify with SVP and Dean/School of Medicine the University policy and practices relative to faculty appointments that may be affecting its relationship with IHC.

5. The Department should improve accessibility to and visibility of the graduate student handbook.

Submitted by the Ad Hoc Committee of the Graduate Council:

Bryan Trump, DDS, MS
Assistant Professor, School of Dentistry

Charles D. Hansen, PhD
Professor, School of Computing

Biomedical Informatics

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-2014
FACULTY: With Doctoral Degrees Including MFA and other terminal degrees							
Full Time Tenured Faculty	5	5	5	3	3	3	3
Full Time Tenure Track	2	2	2	5	6	6	7
Full Time Career-Line/Adjunct	4	4	4	2	1	1	0
Part Time Tenure/Tenure Track	1	1	4	3	3	3	3
Part Time Career-Line/Adjunct	0	1	1	0	1	0	0
With Masters Degrees							
Full Time Tenured Faculty	0	0	0	0	0	0	0
Full Time Tenure Track	0	0	0	0	0	0	0
Full Time Career-Line/Adjunct	0	0	0	0	0	0	1
Part Time Tenure/Tenure Track	0	0	0	0	0	0	0
Part Time Career-Line/Adjunct	0	0	0	0	0	0	0
With Bachelor Degrees							
Full Time Tenured Faculty	0	0	0	0	0	0	0
Full Time Tenure Track	0	0	0	0	0	0	0
Full Time Career-Line/Adjunct	0	0	0	0	0	1	1
Part Time Tenure/Tenure Track	0	0	0	0	0	0	0
Part Time Career-Line/Adjunct	0	0	0	0	0	0	0
Total Headcount Faculty							
Full Time Tenured Faculty	5	5	5	3	3	3	3
Full Time Tenure Track	2	2	2	5	6	6	7
Full Time Career-Line/Adjunct	4	4	4	2	2	2	2
Part Time Tenure/Tenure Track	1	1	4	3	3	3	3
Part Time Career-Line Adjunct	0	1	1	0	1	0	0
FTE from A-1/S-11/Cost Study Definition							
Full-Time Salaried	10	7	10	9	8	7	8

Biomedical Informatics

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-2014
FTE from A-1/S-11/Cost Study Definition							
Part-Time or Career-Line/Adjunct	1	1	1	1	1	2	1
Number of Graduates							
Graduate Certificate	7	3	3	0	3	5	5
Master's Degrees	5	2	5	4	4	9	7
Doctoral Degrees	8	3	4	8	9	4	9
Number of Students Based on Fall Third Week Semester Data							
Enrolled in Masters Program	19	18	19	16	17	17	24
Enrolled in Doctoral Program	41	44	49	45	43	41	42
Department FTE Undergrad	0	1	2	1	1	2	1
Department FTE Graduate	43	43	50	42	45	50	53
Department SCH Undergrad	15	18	51	27	21	45	28
Department SCH Graduate	851	850	1,005	837	900	1,010	1,056
Undergraduate FTE per Total Faculty FTE	0	0	0	0	0	0	0
Graduate FTE per Total Faculty FTE	4	5	5	4	5	6	6
Cost Study Definitions							
Direct Instructional Expenditures	2,543,866	2,488,124	2,025,669	2,093,681	2,388,479	2,380,171	2,524,568
Cost Per Student FTE	59,091	57,696	38,993	48,975	52,236	45,795	47,005
Funding							
Total Grants	3,360,159	3,935,152	3,841,153	4,042,905	4,891,999	4,434,535	5,427,211
Appropriated Funds	157,339	171,871	155,115	146,330	160,375	157,806	168,503
Teaching Grants	1,186,546	1,217,450	1,126,894	1,154,502	1,270,791	1,157,601	1,097,142

Memorandum of Understanding
Department of Biomedical Informatics
Graduate Council Review 2014-15

This memorandum of understanding is a summary of decisions reached at a wrap-up meeting on December 15, 2015, and concludes the Graduate Council Review of the Department of Biomedical Informatics. Vivian S. Lee, Senior Vice President for Health Sciences; Wendy W. Chapman, Chair of the Department of Biomedical Informatics; Charlene R. Weir, Education Committee Chair for the Department of Biomedical Informatics; David B. Kieda, Dean of the Graduate School; and Danny Nelson, Administrative Assistant in 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 October 26, 2015. At the wrap-up meeting, the working group agreed to endorse the following actions:

Recommendation 1: Continue efforts at increasing student diversity, including the pursuit of supplemental NIH funding and recruitment packages that will complement future recruitment efforts to attract underrepresented minority students.

To address this recommendation the Department has articulated and, in some cases, begun implementation of the following plans: 1) Establishing an Education Committee (EC), chaired by the Director of Graduate Studies; 2) More proactively interfacing with local high schools to market the program, including a 2016 goal of offering an open house in conjunction with high school career days (to be overseen by an appointed member of the EC); 3) Beginning a review, conducted by the EC to continue until August 2016, of all funded grants in order to encourage investigators and faculty to submit noncompeting administrative supplements to "provide administrative supplements to improve the diversity of the research workforce by supporting and recruiting students, post-doctorates, and eligible investigators from groups that have been shown to be underrepresented in health-related research"; 4) Scheduling meetings during January and March 2016 with University diversity leaders to discuss designing a plan specifically targeted at recruiting American Indians from the western region.

The Department is encouraged to meet with the Graduate School's Assistant Dean for Diversity, Araceli Frias, to pursue additional recruitment and retention programs available for departments. As per a suggestion from Dean Kieda, the Graduate Preparation Institute (GPI) might be expanded to include the Health Science departments,

Progress on these plans will be provided in regular review update reports made to the Graduate School.

Recommendation 2: Enhance efforts to identify research and other collaborative opportunities locally, nationally, and internationally that can capitalize on the Department's expertise and reputation and enhance Department revenues.

The Chair expressed appreciation for this recommendation and identified some opportunities to move forward in this area: 1) Undertaking a fiscal analysis and planning process to engage with high-level executives from non-academic health and insurance organizations who need cutting- edge informatics systems to fulfill their missions (to begin February 2016, led by the Director of Graduate Studies); 2) Implementing a more accurate system for measuring and tracking existing faculty activities in local national, and international arenas; 3) Establishing a master's degree, possibly with different tracks. The SVPHS has voiced support for this initiative. The Department is exploring this idea specifically at the Songdo Korea Campus, with a proposal submission date of April 2016, for a possible start date of Spring 2017; 4) Creating a professional master's program that will be marketed nationally and internationally, with a proposal submission date of May 2016. Progress on these plans will be provided in regular review update reports made to the Graduate School.

Recommendation 3: Explore the impact of the low level of faculty salary support on faculty hiring and retention.

As is stated in this recommendation, the Department's levels of salary support are notably low in comparison to other top programs. To address this recommendation, the Chair is leading a review of the situation in relation to comparative faculty hiring, tenure, and retention. A white paper describing the findings will be reported to the faculty and UUHSC leadership by Summer 2016. The Sr. VPHS encourages building relationships with community companies and tapping into any funding that might be available to raise the level of hard funding support for faculty salaries, thereby bringing them into line with competitors.

Recommendation 4: Clarify with SVP and Dean/School of Medicine the University policy and practices relative to faculty appointments that may be affecting its relationship with IHC.

The Department plans to submit an analysis of this issue to the SVPHS and to clarify the current situation with IHC appointments as they are impacted by University policies and practices relative to those appointments. As stated in the Chair's response, "We will submit our analysis by early January for review and schedule a discussion before April 2016." An update on this situation will be included in regular review updates to the Graduate School.

Recommendation 5: The Department should improve accessibility to and visibility of the graduate student handbook.

The Academic Program Manager has already taken action on this recommendation by creating a Canvas course, one-stop location for all information on the academic program, including family leave and dismissal policies, and links that will assist students moving to Salt Lake City. The handbook is slated to be complete by March 2016; notification of the completion will be made by the Director of Graduate Studies to the Graduate School.

This memorandum of understanding is to be followed by regular letters of progress from the Chair of the Department of Biomedical Informatics to the Associate Dean of the Graduate School. 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 will be scheduled during AY 2017-18 to discuss progress made in addressing the review recommendations.

Vivian S. Lee   _____
Wendy W. Chapman   David B. Kieda
Charlene R. Weir   Dean, The Graduate School
David B. Kieda   February 4, 2016