

Proposal to Eliminate Academic Program **Pursuant to UW Regulation 6-43** **PhD Statistics**

Statement of the reasons for elimination of the program:

The Statistics department's Ph.D. accepted no new students this academic year, 2016-17; the degree should be considered for closure so that emphasis may be placed on the M.S., an invigorated B.S., and minors. Note: NO recommendation is being made to eliminate the undergraduate minor, the B.S. Statistics, or the M.S. Statistics programs.

Description of the program and relevant data:

Describe the mission, curriculum, content and format of the program:

The Ph.D. Program in Statistics provides a solid background in statistical theory and in statistical methods, in technical reading and writing skills, and in conducting independent research. Most graduates from our doctoral program have been employed as tenure-track faculty at other universities. They also have the necessary background to work as lead researchers in industrial and research organizations.

Pre-Requisites for the Required Courses

- 5255 Theory of Probability
- 5265 Theory of Statistics
- 4200 Math Analysis (or Analysis for Statisticians Topics Course)
- 5025 Design and Analysis of Experiments
- 5015 Regression

Required:

- STAT 5210 Statistical Methods 1
- STAT 5220 Statistical Methods 2
- STAT 5230 Statistical Methods 3
- STAT 5380 Bayesian Data Analysis
- STAT 5470 Data Analysis
- STAT 5510 Distribution Theory
- STAT 5520 Inference I
- STAT 5530 Inference II
- STAT 5540 Large Sample Theory
- STAT 5620 Theory of Linear Models
- STAT 5660 Computational Statistics
- STAT 5810 Seminar (3 hours; 3 presentations)

Methodological Topics - at least 2 of the following which are **required** when offered

STAT 5615 Advanced Time Series
STAT 5630 Multivariate Analysis
STAT 5650 Advanced Sampling
STAT 5670 Mixed Models

The remaining hours of doctoral work are typically filled in part by other graduate level statistics/mathematics courses/Dissertation Research. Students who enter the program lacking a course in Mathematical Analysis or the equivalent should take MATH 4200 in their first year. MATH 4200 may be counted as part of the doctoral degree program.

Graduation Requirements:

- (1) At the end of the first year in the doctoral program each student must take a comprehensive qualifying examination. If needed a student may retake this examination one time. A passing grade on this examination is mandatory for continuance in the doctoral program.
- (2) After completing this examination a student with the assistance of her/his advisor will be expected to form a doctoral committee. This committee will determine which courses are to be included in the student's Doctoral Program and will set the conditions for the dissertation proposal and the preliminary examination. A passing grade on the preliminary examination is mandatory for official admittance into the doctoral program by the graduate school.
- (3) Once a committee is formed at a time deemed appropriate by the student, his/her adviser, and the committee, the candidate will present to the committee a proposal for dissertation research. After the committee has amended or approved the proposal, they will set terms for the preliminary examination. This examination will usually contain a written section and will always include an oral portion to demonstrate the student's research readiness.
- (4) The student must write and successfully defend a dissertation research project. The specific conditions of the dissertation project are to be determined by each student's doctoral committee. It is expected that portions of the dissertation will be submitted for publication in peer reviewed journals.

Describe the role of the program within the context of the college and the mission of the University:

Increasingly the world around us, and all academic disciplines, are becoming more and more reliant and dependent upon statistics. It is as H.G. Wells predicted nearly a century ago, "Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write." Certainly this day has arrived. Today the basic principles of statistical thought and reasoning are as necessary for the understanding of sporting events and the nightly news, as they are in conducting state of the art research.

Graduates with statistical training are employed in a broad spectrum of areas, which include the business world, the sciences (biological, social, physical, and health), as well as the fields of engineering and education. There are many job opportunities for statisticians at all levels.

Financial data relevant to the academic program:

Cost data is for ENTIRE department and is not disaggregated by degree.

Ratio of student credit hours per FTE (AY 2014/15): 1,236.6

Direct instructional expenditures (FY 2015): \$1,118,035

i) Per student FTE: \$4,402

ii) Per total degrees awarded: \$223,607

iii) Non-personnel expenditures / total academic FTE: \$4,566

Course enrollment (AY 2014/15)

i) Classes falling under university minimums: 6

ii) Lower-division courses falling under university minimums: 0

Research expenditure per tenure-track FTE (FY 2015): \$46,783

Admission, enrollment and graduation data relevant to the program, including the number of students currently enrolled and the status of their progress toward graduation:

COLLEGE/DEPARTMENT Program	Doctorate/Professional Degrees Granted					Total
	2010- 11	2011- 12	2012- 13	2013- 14	2014- 15	
Statistics	2	1	2	2	1	8
Department Total	2	1	2	2	1	8

COLLEGE/DEPARTMENT Program	Doctorate/Professional Majors					Total
	Fall Semesters					
	2011	2012	2013	2014	2015	
STATISTICS Statistics	16	14	10	7	5	52
Department Total	16	14	10	7	5	52

Total doctoral candidate students currently in PhD Statistics Program = 4. Admissions for AY 16-17 = 0.

Describe the administration of the program:

The PhD program is administered by the Department of Statistics, College of Arts and Sciences, Department Head: Ken Gerow

Describe the faculty and academic professionals who serve in the program, including their academic credentials, academic rank and length of service to the University:

Richard Anderson-Sprecher, Ph. D. Statistics, University of Iowa.
Rank: Professor
Length of Service: 26 Years (1990)

Ken Gerow, Ph. D. Biometry, Cornell University; Head of Department.
Rank: Professor
Length of Service: 23 Years (1993)

Snehalata Huzurbazar, Ph.D. Statistics, Colorado State University.
Rank: Professor
Length of Service: 21 Years (1995)

Timothy Robinson, Ph.D. Statistics, Virginia Tech (seconded into Directorship of WWAMI since summer 2014).

Rank: Professor

Length of Service: 16 Years (2000)

Stephen Bieber, Ph.D. Quantitative Psychology, University of California-Berkeley (seconded into Directorship of WYSAC since summer 2015).

Rank: Professor

Length of Service: 37 Years (1979)

Shaun Wulff, Ph.D. Statistics, Oregon State University.

Rank: Associate Professor

Length of Service: 17 Years (1999)

Annalisa Piccorelli, Ph.D. Epidemiology and Biostatistics, Case Western Reserve University.

Rank: Assistant Professor

Length of Service: 1 Year (2015)

Scott Crawford, Ph.D. Statistics, Texas A & M University.

Rank: Assistant Lecturer

Length of Service: 4 Years (2012)

Grants Awarded to Tenured and Tenure-track faculty during AYs 2011 through 2016

Over academic years 2011-2012 through 2015-2016, department colleagues have been involved (as PI or Co-PI) on a total of \$6,792,720 in funded research.

Graduate Student Committees. Another aspect of our research/teaching activities is our role on graduate committees outside of our department. In the period encompassing calendar years 2011 through 2015, we collectively served on well over 100 such committees, supporting research across virtually all of the science departments on campus.

Grants and Contracts Awarded as PI or Co-PI to Tenured and Tenure-track faculty during AYs 2011 through 2016

Scott Crawford:

2014. \$500

Planning and Creation of First Year Seminar
UW-ECTL

Ken Gerow

2011-present \$22,000 Biostatistics Support, NPS Fire Ecologists
National Park Service

Burke Grandjean

2006-2012 \$294,000 Comprehensive Survey of the American Public
National Park Service
2011-2012 \$10,200 Arrest-related Deaths in Wyoming
US Bureau of Justice Statistics
2011-2012 \$6,100 Statistical Consulting for Environmental Monitoring
National Park Service
2011-2014 \$35,000 Building Science Capacity While Addressing Climate
Change, U.S. Fish and Wildlife Service
2011-2014 \$50,000 Modeling Support for Species Recovery
National Park Service
2012 \$13,000 International Symposium on National Parks and Climate
Change, University of Wyoming
2012-2013 \$12,800 Statistical Consulting for Environmental Monitoring
National Park Service

Snehalata Huzurbazar

2011-2016 \$750,761 Modelling and Analysis of Gene Duplication
National Science Foundation
2012-2014 \$6,800 Establishing the Feasibility of FDA for Determining the
Health Consequences of Body Weight Changes Among
Older Adults, Institute of Translational Health Sciences,
University of Washington
2013-2018 \$140,375 Clinical Translation Research Infrastructure Network
National Institute of Health
2014-2015 \$25,875 SAMSI Bioinformatics Program Research Participation
National Science Foundation
2015 \$22,000 Visualizing and Modeling vaginal microbiome data for
improved understanding of BV, National Institute of Health
2015 \$10,000 Collecting baseline data and documenting best practices for
improving recruitment and retention of diverse STEM
faculty at the University of Wyoming
UW Office of Research and Economic Development

Tim Robinson

2011-2012 \$6,100 Statistical Consulting for Environmental Monitoring
National Park Service
2011-2012 \$22,500 Developing graphical presentations of high dimension
design applications in energy research

2011-2014	\$35,000	School of Energy Resources, UW Building Science Capacity While Addressing Climate Change, U.S. Fish and Wildlife Service
2011-2014	\$15,000	Building Science Capacity to Implement Strategic Habitat Conservation While Addressing Climate Change U.S. Fish and Wildlife Service
2013-2016	\$16,700	Statistical Consulting for Environmental Monitoring National Park Service
2015-2018	\$95,114	Statistical Support for Inventory and Monitoring U.S. Fish and Wildlife Service
Shaun Wulff		
2014	\$3000	Statistical Modeling of Resilient Modulus Wyoming Department of Transportation
2014	\$10,533	Improvement to Intraoperative Hearing Assessment and Prevention of Inner-Ear Damage in Humans Oticon Research Grants
2014-2016	\$5,224,094	Atmosphere to Grid: Advanced Modeling to Enhance Energy Conversion and Delivery; Department of Energy Experimental Program to Stimulate Competitive Research

Describe the program facilities, including classrooms and offices, library and equipment used by or dedicated to the program:

No office allocations for faculty would change, as the department's undergraduate and masters' offerings will remain intact. Nevertheless, a listing of offices is below.
Offices: Ross Hall 202, 203, 222, 325, 330, 331, 332, 333, 334, 335, 336 337, 340

Classroom use is general/central pool classrooms. Instructional technology needs will remain the same, as will research technology, libraries, and facilities usage needs.

The Department has its own computer lab available to students. The central library and our department library contain excellent collections of journals and books in statistics and related areas. Cooperative research efforts between statistics and other applied areas provide many research opportunities.

Evaluations from accrediting bodies or other reviewers of the quality of the program and its faculty and academic professionals:

Not applicable.

Comparison of the program with related or similar programs:

There is no other degree program on campus at this time which is similar to this one. The remaining degrees (BS and MS) will be retained with 'renovation' to become more closely aligned to the more interdisciplinary areas of data science/data analytics. Several groups of researchers across campus (Botany, Geology, etc.) have individuals working in these areas. Collaborations are expected to form.

Describe the anticipated effects of elimination of the program upon the college in which the program is situated, upon other colleges and units of the University, and upon the University as a whole, including:

Effects upon students enrolled in the academic program:

All students currently active in the Ph.D. program will be allowed to finish. No new students will be enrolled; enrollment ceased with Fall 2016. Coursework should be completed within two years and dissertations written and defended in three.

Effects upon faculty and academic professionals who serve in the program, including termination of any existing positions:

Faculty and administrative professionals who serve the program will continue to teach in the BS and MS as well as provide thousands of hours of service teaching across campus at the undergraduate and graduate level.

Educational and financial effects upon other units of the University:

None. Service teaching upon which other areas of campus heavily depend will continue. New collaborations are expected to form around data science/data analytics as the BS and MS degrees are 'renovated' to more closely align with those interdisciplinary areas.

Effects upon faculty, academic professionals, staff, students and alumni of the University:

It is hoped that the departments' new focus on its BS and MS, as well as the 'renovation' described above, will invigorate this important department. More collaborations are expected to form and an increase in service teaching is predicted (as data science/data analytics attracts even more students from other departments across campus).

Effects on the State of Wyoming, including loss of benefits conferred outside the University by the academic program:

Ph.D. graduates from this program are rarely hired in Wyoming. The new emphasis on data science/data analytics in the BS and MS is expected to produce graduates who will be hired into Wyoming industries.

Implementation plan to be followed in the event the academic program is eliminated, including:

Procedures for handling current and future applications for admission:

Current and future applicants will be informed that the program has been eliminated and is not accepting new students.

Plans for assisting currently enrolled students to complete the course of study:

All students currently active in the Ph.D. program will be allowed to finish. Students will be carefully advised to make certain that coursework is completed within two years and dissertations written and defended in three.

Plans for accommodating faculty and academic professionals who will be terminated or otherwise affected by elimination of the academic program:

No faculty or academic professionals will be terminated. All will continue to teach in the BS and MS, as well as participate in service teaching for undergraduates and graduate students across campus.

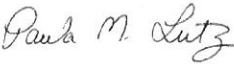
College of Arts and Sciences

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16 December 2016

MEMO

TO: Kate Miller
Provost/VPAA

FROM: Paula M. Lutz 
Dean, Arts and Sciences

RE: Program Review for the Ph.D. program in Statistics: Dean's Response, 1st comment period

I am to summarize consultations with faculty, AP's, and students in this program, which occurred during the first comment period. Since the decision to eliminate this program has been affirmed by Academic Affairs, I attempted to collect comments from faculty (tenure-track and AP's), staff, students, alumni, and friends of the program through a Google Survey tool. This was sent to the DH on October 20, with a request to give the survey wide distribution. **For this program, there were no responses on the survey tool and no responses via e-mail or hard copy.** Since the suggestion to eliminate this program came from the department, this is not surprising.

As is my custom, I visited each department and program in the College during the fall semester. During my visit to Statistics, a lively discussion ensued on program closures and department/program mergers. Faculty did not specifically mention concern over the elimination of their Ph.D. however; concern was expressed about several other degree programs in the College. The majority of that discussion focused on the possible merger with Math.

The Dean remains committed to the goals described in the review memos for the B.S./M.S./Ph.D. in Statistics—a renovated B.S., closure of the Ph.D., and renewed emphasis on the M.S., with ongoing discussion of a departmental merger with Math.

UNIVERSITY OF WYOMING

Ken Gerow, Head
Department of Statistics
Dept. 3332 • Room 327, Ross Hall •
1000 E. University Avenue
Laramie, WY 82071
(307) 766-6600 • fax (307) 766-3927 • e-mail: gerow@uwyo.edu

December 22, 2016

Dear Provost Miller,

My stance on eliminating the Statistics Ph.D. program is that I would accept it, based on budgetary contractions, despite that I would rather leave it on the books and currently in hiatus.

The program benefits the University in ways beyond serving our own students. Some of the classes we teach to our Ph.D. students are of interest beyond our department; for example, graduate students from the Electrical and Computer Engineering department of the College of Engineering and Applied Sciences regularly take some of our statistics theory classes. Research active statisticians have in the past few years contributed to cutting edge research in disciplines across campus, evidence for which are research papers in leading journals such as Nature, Science, and PNAS.

At the moment our department is reduced in force due to random events (one moved back to New Zealand, one retired, two have been seconded to administrative positions at UW), from 9 now to 6 (we hired a new assistant professor, Annie Picorrelli, who started a year ago; hence 6, not 5). That size is just a little bit too small to support a Ph.D. program in addition to our robust service teaching and Bachelor's and Applied Master's programs. Hence we did not admit any new Ph.D. students in this current year, and anticipate refraining again for next year. Should we be able to hire (at least one more), that would change.

My own preference would be to keep the program on the books, and to admitting new students in the near future, should budgetary constraints allow us to hire.

Respectfully,

Ken Gerow

Statistics PhD

6 faculty

Elimination – Pros

- Able to focus on & strengthen BS and MS
- Free up some faculty time (in demand to serve as external thesis/dissertation committee members)
- Most graduates do not stay in Wyoming, so there is a poor return on investment for the state
- Faculty will still have the challenge of working with graduate students through the MS program

Elimination – Cons

- Faculty may be disadvantaged in securing grants (may not have research assistants)
- Fewer teaching assistants available
- Loss of professional network of former students
- Loss of interdisc collaborations between Stats doctoral students and those in other depts (can MS students fill this role?)
- Doctoral students no longer available to do consultations with students in other depts
- Contributes to general trend of lack of availability of PhD programs
- Not clear how much money would be saved since cost cannot be disaggregated from BS and MS costs

Questions

- How does MS vs. PhD effect job prospects?
- Role of cohort in doctoral program: Does having few doctoral students diminish the education they receive? In some disciplines, going through a program with a cohort so you can learn from both your professors and fellow students is deemed important.
- Would the department need fewer GA positions if PhD was eliminated?
- What is the justification for “keeping it on the books” other than convenience?
- What exactly is the relationship between the Data Science program and the Stats PhD? Would it be a redesign of the Stats PhD or something entirely separate?

Retention – Pros

- Supports statistical literacy in other disciplines; graduate students in other disciplines take graduate-level Stats courses (unclear if MS-level classes would achieve this)
- Preference for “keeping it on the books” (no justification given)
- Support for planned Data Science interdisciplinary program

Retention – Cons

- Cost per degree is high compared to other programs considered for elimination
- Risks reputation of dept – perception that applicant pool is weak and some graduates are weak; better to have BS and MS programs with a good reputation than a PhD program with a mediocre one
- May need to revamp program if kept, with potential need for more faculty

Potential Jobs for Graduates

- Professors
- Lead researchers in private or public sectors (e.g., business, sciences, engineering, education)

Recommendation

- Eliminate, but with commitment to strengthen MS program (no further faculty reductions)
- If UW wishes to pursue an interdisc Data Science PhD, I think it makes more sense to start from scratch rather than transform the Stats PhD. As a new initiative (rather than a revamp) they might have more luck getting money from the legislature to support the initiative. (See last question—may not be relevant.)

December 3, 2016

To: Provost Kate Miller, University of Wyoming
From: Prof. Snehalata Huzurbazar, Department of Statistics, University of Wyoming

I fully support that the PhD in Statistics be eliminated. In fact, I would recommend taking a serious look at the MS in Statistics and support its elimination as well. The BS and MS degrees in Statistics at UW are about 80% identical in their coursework. Even given that, the number of applications to the MS pool are minimal and often these are students who are not succeeding in other departments on campus. The courses are fairly out of date and really need to be revamped for 2017 onwards.

Here are my reasons in support of elimination of the PhD in Statistics:

Faculty composition:

Bieber & Gerow: not trained as statisticians or biostatisticians (Psychology and biometry, resp.) This leaves 4 faculty trained in Statistics departments and 1 in Biostatistics. Most Phd departments generate external funding especially to support students; such funding is usually not viewed positively within the department. A handful of years ago when I funded 3 students as RAs on grants, I was told by more than 1 Stats colleague that I was 'taking away the good teachers'. Graduate students are routinely valued in Stats at UW for their ability to help as teaching assistants and not much more.

Student applicants:

The stats department faculty have never actively pursued recruiting graduate students and the number of applicants is usually minimal. In fact, the face-saving statement in the program review document about Stats not accepting any students hides the truth that there were about a handful of at best marginal students that had applied. In fact, some were on campus, and were interviewed by a couple of stats faculty to see if they might be acceptable. As a note, other stats departments in this age of data science/etc. have seen sizeable increases in applicant pools.

Coursework:

Outdated, and not taught at the appropriate level. Recent examples:

- (i) Spring 2016: Dr. Tim Robinson taught the Phd level Theory of Linear Models course using as a textbook a book that is out of print, "A First Course in the Theory of Linear Statistical Models" by Ray Myers and Susan Milton. This is a book written at the MS level, and in fact, Dr. Robinson himself taught from this book a linear models course that Stats offered for its Applied MS students (this would have been in 2005 or so). Furthermore, in the preface, the authors clearly state that the book is intended for advanced undergraduates or beginning graduate students. All the students in the class were PhD students who has passed the PhD qualifying exams.
- (ii) Spring 2016: Dr. Shaun Wulff taught the PhD level Mixed Models course with the SAS Manual, "SAS® for Mixed Models, Second Edition". Again, this is a theory

course, at the PhD level. At most a MS course might use a SAS manual as the textbook.

These are recent examples of how PhD students are not being trained appropriately by the U of WY Department of Statistics.

Post-graduation Employment:

Employment rates for statisticians are close to 99%. An argument that 'all our students get jobs' is meaningless, since everyone who has a pulse and a 'stats' degree basically gets a job.

Even given that, a recent PhD from UW Stats in 2015 interviewed (in person) for a non-tenure track position as a statistical consult in a mid-level Statistics Department. As I know many of my colleagues around the country, two faculty members from this department later informed me that this individual was so badly trained and incapable of providing answers to questions, that the faculty voted him not qualified for the position, and eliminated him from the pool of candidates. I am happy to provide names if needed.

PhD environment:

Under the last two department heads, the Stats department has not held any sort of seminar series, sent students to even local conferences, or engaged in any other activities that most graduate programs encourage. The argument that Stats has no money is baseless: there is plenty of money being generated from outreach courses, money which is being used to hire (without faculty input) individuals to teach as adjunct. There are now two such hires, and neither was trained for the teaching that s/he is doing.

UW needs a solid set of statistics courses to offer students in other departments; this department is hardly providing this service. Many departments have started offering their own courses under different titles, and some have hired their own 'stats' faculty.

December 9, 2016

Dr. Kate Miller, Provost
Office of Academic Affairs
University of Wyoming

Dear Provost Miller:

Thank you for the invitation to comment on the proposal to eliminate the Ph.D. program in Statistics. I recognize that these are extremely difficult times for UW, and that painful decisions may be necessary. I write to point out some areas in which I believe this particular proposal understates the adverse effects of elimination. But I will begin by noting that the proposal's stated reasons for eliminating the Statistics Ph.D. are not at all compelling.

Only two reasons are provided: no new students were accepted this academic year; and closure would allow greater emphasis on the department's other offerings. The first of these reflects circular reasoning. No new students were admitted, but I suspect that was partly because the program was seen as being at risk of elimination. The second reason is unconvincingly vague. No specifics are offered regarding what such a shift in emphasis would entail, nor how eliminating the Ph.D. would foster it.

The implicit rationale underlying all the current proposals for program elimination is the university's financial crisis. It therefore seems noteworthy that cost savings are not among the stated reasons for eliminating the Ph.D. in Statistics. On the contrary, the proposal says there would be no reduction in resource needs (not faculty positions, not offices, and not classrooms). I cannot help wondering if elimination of the Ph.D. would serve any purpose at all, beyond a symbolic one.

Important adverse effects on faculty in the department, on other units of the university, and on the state as a whole are all left unacknowledged in the proposal. Without doctoral-level graduate students to employ as Research Assistants, faculty will be disadvantaged in securing external grants. Students in the large introductory classes in the department will be similarly disadvantaged by the absence of doctoral-level Teaching Assistants. UW units that hire Research Scientists (such as the Wyoming Geographic Information Science Center or the Wyoming Survey & Analysis Center, among others) will be disadvantaged in not having a ready source of newly minted statisticians with doctoral-level training. While it is true that most of the department's Ph.D. graduates leave the state, they tend to remain in communication with their doctoral mentors throughout their subsequent careers. The result is a national and international professional network that benefits the state of Wyoming in subtle but non-trivial ways. Eliminating the Statistics Ph.D. will forever stunt this network, thereby depriving the state of its future benefits.

I hope the above points merit consideration in the decisions to be made.

Sincerely,

Burke D. Grandjean
Professor Emeritus

Cc: K. Gerow, Statistics Dept. Head

Subject: Comments. Reconfiguration of statistics department

Date: Monday, November 21, 2016 at 4:38:51 PM Mountain Standard Time

From: Embere Hall

To: Program Review - Academic Affairs Office

UW Program Review Team,

I am writing to provide comment on the consolidation / reconfiguration of the Department of Statistics. While the program elimination website only lists elimination of the PhD in statistics, it is my understanding that there is a proposal to consolidate the statistics department with the mathematics department.

While a merger of these closely aligned departments may make financial sense, it is a mistake for the long-term development of applied statistics in the UW system. Many of our flagship science programs, including Ecology and Engineering, rely on a suite of applied statistics. In fact, progress in both of these fields is inexorably linked to understanding and successfully using statistics. However, mathematics departments promote and encourage theoretical developments. It is my deep-seated concern that consolidation will result in impressive work with theoretical statistics, and very little progress on applied statistics. While, initially, this may not seem like a big deal, it has the potential to dramatically slow research progress on campus, especially among those programs that require new advances in application.

I urge you to either 1) reconsider consolidation of the statistics and mathematics departments, or 2) build safeguards into the merged department that incentivize new approaches to applied statistics.

Best,
Embere

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Embere Hall

Program in Ecology

Wyoming Cooperative Fish & Wildlife Research Unit

Dept. of Zoology & Physiology

University of Wyoming

Cell: 307.413.2253

Email: emberehall@gmail.com

www.wyocoopunit.org

<http://emberehall.wix.com/climatechangeecology>

Shaun S. Wulff
Department of Statistics
University of Wyoming
P.O. Box 3332
Laramie, WY USA 82071-3332

December 16, 2016

Re: Ph.D Program in Statistics

Dear Provost Kate Miller.

The Department of Statistics is one of the smallest Statistics departments in the country. It is also unique in its orientation to applied Statistics. Despite its small size, it has a history of service to undergraduate students, graduate students, and faculty across a wide array of disciplines while also meeting the needs of its own graduate students.

The Ph.D. program in Statistics is not designed to be a large program.

Admittedly, the number of doctoral degrees per year has never been high. Faculty advisors for this graduate program have typically numbered around 5. Resources are often stretched as these advisors also have job responsibilities and priorities pertaining to the wider educational mission and the research commitments to the university. The number of graduate advisors have also been impacted the last few years as two faculty members have taken on administrative roles, one has been on leave, and two more have taken sabbaticals. Such factors have severely impacted the ability of the department to meet the needs of all constituents. Nevertheless, the department currently has 4 doctoral students. Due to these reasons, no new Ph.D. students were admitted during the most recent academic year.

Program size is not the only measure of effectiveness.

Statistics Ph.D. students have had success in finding discipline related careers upon graduation. The strength of the program has been its orientation to the application of statistics, and that has been a draw to many of the students as well as their employers. The program also does not exist in isolation. Students from other departments have taken doctoral level courses offered by the department, particularly students in Electrical Engineering. These constituents are concerned about the possible void left if this graduate program is eliminated. Many Statistics doctoral students have supplemented their own graduate education by taking graduate courses outside the department. Thus, this program is an illustration of interdisciplinary education among departments and colleges.

The Statistics Ph.D. program contributes to the research mission of the university.

Due to the program emphasis on applied Statistics, graduate faculty tend to work closely with the researchers across the university. This research has directly resulted in highly regarded publications and substantial grant dollars. These problems invariably involve graduate students both within and outside the department. Developing such collaborations, takes time and effort, but the Statistics department has worked hard to build these research connections. Ph.D. students in Statistics have been supported by grant monies through these research collaborations. In fact, at least one current doctoral student is part of a research group involving other doctoral students from disciplines across campus. It would be a shame to break apart such promising interdisciplinary collaborations at this time.

Respectfully,



Dr. Shaun S. Wulff, Associate Professor

Subject: Statistics PhD Program Commentary

Date: Friday, October 14, 2016 at 1:03:33 PM Mountain Daylight Time

From: Guy Litt

To: Program Review - Academic Affairs Office

UW Program Review,

As a new engineering doctoral student at UW in Fall, 2012, I sought out help from the statistics department on a research project I was designing. Dr. Bieber set me up with one of his advanced doctoral students Jared Studyvin. Jared was an exemplar student, whose consultation helped me design and analyze a statistically sound study on stream water geochemistry in Panama. The results were presented at the Fall 2012 Geological Society of America meeting. The statistics PhD program is a valuable service to the rest of the UW research community, and shouldn't be removed.

Regards,

Guy Litt

PhD Candidate

Department of Civil Engineering

Statement on Elimination of
The Ph.D. Degree in Statistics at UW

Recent directives to reduce the number of programs at the University of Wyoming have led to recommended elimination of the Statistics Ph.D. program. Because of reduced faculty numbers in our department, for the 2015-16 academic year we independently elected to limit graduate admissions to MS students (for that year). Our hope at that time was, and still is now, to place the program on hiatus, not to eliminate it. Reasons for bringing our faculty numbers back to previous levels are solid, and once UW is out of our financial crisis we should do so.

The demand on extra faculty resources for the doctoral program is small.

Offering a PhD degree requires, typically, about four extra classes per year, or one extra faculty member. We currently have two faculty members with very limited teaching availability because they have taken on administrative roles with other units on campus (WySAC and WWAMI). We have also “made do” for three of the last four years because of faculty members being on leave (two years) or on sabbatical (one year). In a small department such as ours, these factors are very significant in terms of even basic functionality. Thus in normal times necessary faculty resources could and should be available in the future.

A critical mass of Statistics faculty must be maintained, independent of degree offerings, to meet the needs of a research university.

For over sixty years the Statistics Department has provided a critical “value-added” contribution to UW, by way of our collaborations with a broad range of researchers around campus. This kind of collaboration and consulting, primarily but not exclusively with faculty and students on campus, is as unusual, even unique, as it is vital. Until recent changes directed because of the Financial Crisis, University consulting has been a component of every statistics faculty member’s job description.

As the discipline of Statistics expands, the Department of Statistics needs to have faculty who can teach cutting edge methods to students, communicate application of these methods to non-statisticians, and still conduct their own research. A Statistics faculty size of 6 to 9 is important for UW at large to retain its place in the research world. A faculty of this size would allow us to continue to offer an effective doctoral program.

The Statistics Ph.D. program contributes directly to the University’s research mission.

As outlined above, statistics faculty research contributes significantly to the success of research in many other departments on campus. Some of the best research on campus would not have appeared in premier journals such as *Science* without substantive collaboration by Statistics faculty. The doctoral program encourages the level of faculty activity that enables such contributions.

Our Ph.D. program also benefits the University at large by way of our students because our Ph.D. students sometimes contribute to this campus-wide role. Dr. Shaun Wulff, for example, is currently incorporating a Ph.D. Statistics student in funded research collaborative with Electrical Engineering. Such contributions will be lost if the program is permanently put

down. Also, in some cases advanced students in other departments take courses in our Ph.D. core. The most notable example is Electrical Engineering, which regularly has graduate students taking our 5510-20-30 courses.

The Statistics Ph.D. program is highly successful in terms of meeting student needs, even if its numbers are small.

Statistics Ph.D. students have had a perfect success rate in finding discipline-related careers upon graduation. The number of doctoral degrees per year has never been high, and we recognize that requirements for “minimum numbers of graduates” and “minimum number of students per class” would be difficult to consistently meet at the Ph.D. level. That said, we imagine a point in the future when University resources for supporting the degree program could easily be justified, based on our total contributions to the University. Size is not the only factor that matters when considering the value of a program.

Statistics involvement with initiatives to create an interdisciplinary Data Science program would be consistent with a doctoral program.

We are currently exploring how best to participate in ongoing initiatives to establish an interdisciplinary program in Data Science. Employers in the state, the nation, and the world have needs for data scientists, needs that far outstrip the numbers of qualified graduates. A doctoral degree in Statistics with concentrations relevant for this enterprise would be a boost for UW and for the state.

Subject: uw news (9/20)

Date: Tuesday, September 20, 2016 at 11:37:38 PM Mountain Daylight Time

From: Justin T. Piccorelli

To: Program Review - Academic Affairs Office

Dear Dr. Miller or other interested party,

I realize that we need to cut. That said, I also worry there are some serious consequences with regard to cutting several Ph.D. programs including, Statistics, and adult and post secondary education. As the only state institution to offer these programs there is an equity component to this decision. Students in the region will no longer have the opportunity that they used to. Do we want certain Ph.D. programs to only be available at very large institutions, or at some point only ivy league universities? This seems to be where things across the U.S. are heading. Opportunities for people to learn at a graduate or doctoral level are disappearing. I also worry that very little attention has been paid to the role of certain departments in the state's economy. What happens if we cut a program that serves a crucial role to the state? Given our role within the state I would feel much better if these cuts were aligned with a statewide economic development plan. Lastly, from what I understand about Ph.D. programs they do more than meets the eye or is communicated through a fairly limited measure. Statistics seems to offer a great deal of service to other programs across the university, like engineering, plant sciences, and health sciences. If they lose their Ph.D. program will their service still be sought after, or will it lose its perceived value? I'm concerned that this program helps to contribute to the quality of dissertations across the campus, and if their Ph.D. program disappears, then the scholarly work campus wide could suffer as a result. Do we want to be surprised when these spillover effects start appearing, or is there a way to minimize some of these issues?

I hope to offer a solution in addition to these concerns and my suggestion relates to my question at the last faculty senate meeting. Would you please consider allowing myself and others to form a group to help departments improve their programs slated for elimination? I'm thinking about a group of faculty who have consulting backgrounds and can think broadly about these programs. Sometimes faculty benefit from fresh ideas on how to improve their programs, and I believe many of these programs could be turned around and with some fresh eyes might become more marketable. Thank you for listening.

Best,
Justin

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