

Proposal to Eliminate Academic Program **Pursuant to UW Regulation 6-43** **M.S. Neuroscience**

Statement of the reasons for elimination of the program:

The M.S. in Neuroscience (within the interdisciplinary Neuroscience program) has produced seven graduates in four years (Fall 2009-Spring 2013). This degree was administered through the Ph.D. program in Neuroscience.

In 2010, the decision was made to stop admitting students to the M.S. Admissions are now only to the Ph.D. program. The M.S. is considered the “default” or fall back degree where for personal or professional reasons a student does not complete the Ph.D. requirements. There is no additional cost; there are no “masters-specific” courses. This program supports the Ph.D. and contributes to the flexibility of that program.

Based on the “default” nature of this program and its ‘no-cost,’ we recommend the creation of a Neuroscience option or concentration within the M.S. in Zoology and elimination of the M.S. Neuroscience from the Master List of degrees.

Description of the program and relevant data:

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

The Master’s Program was/is a unit of the Doctoral Neuroscience Program, which is a research-focused Ph.D. program that exposes students to a variety of techniques, courses, and interdisciplinary thinking. The goal is to provide students with the necessary background to be broadly trained research neuroscientists. Special strengths of the program are faculty commitment to student education and research training and highly individualized programs of research and study. Faculty assistance and research facilities are readily available to meet the needs of individual students.

A particular emphasis of the program is the utilization of novel mammalian and nonmammalian species for neurobiological studies. Student and faculty members work employs diverse methodology, including neurophysiology, neuroanatomy, western blots and co-immunoprecipitation, immunohistochemistry, and various behavioral test procedures. Student-faculty interactions are fostered through the weekly seminar in Neuroscience.

The Master’s Program has not admitted students since 2010. The last Master’s was awarded in 2013. The Master’s Degree track was terminated (~2012), students are no longer admitted, although the Master’s degree remains on the books. Graduate Neuroscience Students are only admitted to the Doctoral Neuroscience Program. **The Master’s Program remains as a “default” degree; it is inactive (not admitting students nor devoting either state or federal resources [Neuroscience Center] to the program. The Master’s degree does fill a need. Students who are admitted into the**

Doctoral Program and have advanced in good standing, but for some reason (e.g. family, fail final dissertation defense) are not advanced to doctoral candidacy may petition for the Master's Degree. This approach seemed fair to the student, particularly in cases where health issues have prevented the student from finishing the final PhD, but have otherwise met expectations for a Master's Degree.

FROM 2010 Graduate Catalog: Program Specific Degree Requirements
Master's Program

After acceptance into the program, each student would select, or be assigned a major adviser and two other faculty advisers, all from the Neuroscience Program faculty. They will serve as the student's graduate committee, devising a set of course requirements (26 credit hour minimum) to best suit the student's educational goals and overseeing the design, execution, and approval of the student's thesis research.

In addition to the usual university requirements for the M.S. degree, an original research thesis (4 hours of thesis research; 5960) on a neuroscience problem and final oral examination will be required. Specific course requirements will include 1) Introduction to Neuroscience (NEUR 5280), 2) participation in at least two semesters in the Graduate Neuroscience Seminar (NEUR 5115; the topic and instructor changes each semester), 3) thesis research. Students are required to take a minimum of two of the following courses: Neurophysiology (NEUR 5685),

Structure and Function of the Nervous System (NEUR 5100),

Neural Mechanisms of Behavior (ZOO 4290), and

Cell Physiology (NEUR 5670).

Students are required to earn a minimum grade of B for the required courses. Additional electives include: Pharmacology I and II (PHCY 6230), Molecular & Cellular Basis of Disease (HM 6520), and Statistics.

Students are required to obtain a B or better in required courses.

The thesis is the final, written product of the research project. The thesis must be submitted to the student's committee at least two weeks before the intended date of final examination. To finalize the master's program and project, one electronic copy of the thesis is submitted to the Office of the Registrar along with the completion of requirements and certificate of approval forms by the graduation deadline.

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

The program supports the Doctoral Neuroscience Program in so far that it allows for some degree recognition for those students who have not completed the final requirements for the PhD in Neuroscience, but have met what would be expected for a master's degree (B or better in all classwork, research presentations and publication from their research).

Financial data relevant to the academic program:

UW Office of Institutional Analysis does not track the normal data-set for interdisciplinary graduate programs. Not applicable since there are no courses specifically for the MS, and program has not admitted students to the Program for 6 years. **There are not any on-campus Master's students.**

Course enrollment- not applicable; no MS coursework

Other instructional cost drivers- not applicable, no MS coursework

Research expenditures per tenured/tenure-track FTE- -0- = **all expenditures are in the Doctorate in Neuroscience, not in the MS.**

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

start	degree awarded	years to degree	Advisor	Dept	College
8-06	MS 8-09	3	Skinner	Z&P	A&S
8-05	MS 8-08	3	Flynn	Z&P	A&S
8-08	MS 8-10	2	Skinner	Z&P	A&S
8-08	MS 8-11	3	Fox	Vet Sci	Ag
8-09	MS 12-12	3	Fox	Vet Sci	Ag
8-10	MS 12-13	3	Schatzl	Vet Sci	Ag
8-10	MS 12-13	3	Culver	Pharm	HS

Describe the administration of the program:

The Master's in Neuroscience is part of the Interdisciplinary Neuroscience Program, Department Head, Bill Flynn.

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

The faculty of the Graduate Neurosciences Program do not teach MS-specific courses in Neurosciences. Nevertheless, the faculty affiliated with the program include:

Bill Flynn (PhD Kansas State University), Director, Graduate Neurosciences Program
Rank: Professor
Length of Service: 30 Years (1986)

Brenda Alexander (PhD, University of Wyoming), Reproductive Biology, Animal Science
Rank: Assistant Professor
Length of Service: 34 years (1982)

Travis Brown (PhD Neuroscience, Washington State University), School of Pharmacy
Rank: Assistant Professor
Length of Service: 4 Years (2012)

Jared Bushman (PhD, Biomedical Genetics, University of Rochester Medical Center), School of Pharmacy
Rank: Assistant Professor
Length of Service: 2 Years (2014)

Kurt Dolence (PhD Pharmaceutical Sciences, University of Kentucky), School of Pharmacy
Rank: Associate Professor
Length of Service: 17 Years (1999)

Jonathan Fox (PhD Virginia Tech), Veterinary Science
Rank: Associate Professor
Length of Service: 8 Years (2008)

Zoltan Fuzessery, Zoology and Physiology
Rank: Professor Emeritus
Length of Service: 26 Years (1987)

Sreejayan Nair (PhD, Mangalore University), School of Pharmacy
Rank: Assistant Professor
Length of Service: 14 Years (2002)

Jonathan Prather (PhD Neuroscience, Emory University), Zoology and Physiology
Rank: Associate Professor
Length of Service: 7 Years (2009)

Kara Pratt (PhD Neuroscience, Brandeis University), Zoology and Physiology
Rank: Assistant Professor
Length of Service: 5 Years (2011)

Stephen Santoro (PhD, Scripps Research Institute), Zoology and Physiology
Rank: Assistant Professor
Length of Service: 2 Years (2014)

Donal Skinner (PhD, Cambridge University), Zoology and Physiology
Rank: Professor
Length of Service: 14 Years (2002)

Qian-Quan Sun (PhD Neurobiology, St. Andrews University), Zoology and Physiology
Rank: Associate Professor
Length of Service: 12 Years (2004)

Baskaran Thyagarajan (PhD, Karl-Franzens University of Graz), School of Pharmacy
Rank: Assistant Professor
Length of Service: 5 Years (2011)

Charles Jeff Woodbury (PhD, SUNY Stony Brook), Zoology and Physiology
Rank: Associate Professor
Length of Service: 13 Years (2003)

Zhaojie Zhang (PhD, University of Oklahoma), Director, Microscopy Core facility
Rank: Senior Research Scientist
Length of Service: 15 Years (2001)

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

Since faculty are affiliated and the program is interdisciplinary, the offices associated with the group are not dedicated to the MS Neuroscience program, but their respective departments.

The NIH Center of Biomedical Research Excellence (COBRE) at the University of Wyoming was initiated in 2000 with the successful funding of the Center grant. This grant was part of the National Center for Research Resources (NCRR) Institutional Development Award (IDeA) Program to broaden the geographic distribution of NIH funding for biomedical and behavioral research. The NCRR identified that the "objectives of the program was to foster health-related research and strengthen institutional biomedical research capabilities by expanding and developing biomedical faculty research capability through support of a multidisciplinary center.." Since 2000 the COBRE has: 1) had a positive impact on the research development of a number of biomedical and neuroscience faculty, 2) enabled the recruitment of new neuroscience faculty, 3) fostered the growth of graduate Neuroscience education (both a MS and PhD in Neuroscience are offered), 4) established a state-of-the art Microscopy Facility, directed by Dr. Zhaojie Zhang. The Microscopy Facility has the leadership and instrumentation for virtually any imaging need.

The Microscopy Core is supported by the Neuroscience Center Core Grant from the National Institutes of Health (P30 RR32128). The objective of the Microscopy Core is to meet the growing imaging needs of the Neuroscience Center investigators who rely on the microscopy imaging to identify the structural bases that occur in neurons and their synapses in response to a variety of physiological events, development, and several neurodegenerative diseases.

Since its establishment, the Facility has grown in terms of instrumentation and service. The Microscopy Facility has four main components: epi fluorescence and bright field microscopy, confocal laser scanning microscopy, transmission electron microscopy, and scanning electron microscopy. The TEM is equipped with a high resolution (4000 X 4000) cooled CCD camera. With its capabilities, the Microscopy Core is essential to the NIH-funded projects of the Neuroscience Center investigators.

No classrooms are specifically used for the MS program; as described above, MS coursework does not exist.

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:

The Program in Neurosciences is ranked #85 by the NRC.

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:

At this time there are 2 students enrolled as Off-campus Continuing students. The students are not actively involved with faculty nor are they taking courses, but have the ability to stay enrolled even though they are making no progress towards the degree. The students have completed the required coursework but have not written or defended a research thesis.

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

All faculty involved in the MS Neuroscience program are also affiliated with the Doctoral program. They will not be impacted.

Educational and financial effects upon other units of the University:

An option for students who cannot complete the PhD program will be constructed within the Zoo/Phys graduate program, thus impacting that program. Otherwise, impacts will be minimal.

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

An option for students who cannot complete the PhD program will be constructed within the Zoo/Phys graduate program. Therefore, impacts will be minimal.

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

An option for students who cannot complete the PhD program will be constructed within the Zoo/Phys graduate program. Therefore, impacts will be minimal.

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

Procedures for handling current and future applications for admission:

No applications or admissions have been taken for this program since 2010. It is the default degree for the doctoral degree in Neuroscience. This means that students who, for some reason, are unable to complete the doctoral degree, could receive this MS degree. Now this will not be possible under the Neuroscience program. [An option for students who cannot complete the Neuroscience PhD program will be constructed within the Zoo/Phys graduate program.]

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

The two current students associated with the programs, described above, will be allowed to write and defend their theses and complete the program. [No coursework is unique to the MS degree. All courses are actually part of the doctoral degree in Neuroscience.] The two impacted students have completed sufficient coursework to attain this degree. Only their thesis remains. **They will be informed that the degree is being eliminated and told to complete their theses within two years' time.**

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

Not applicable. The faculty and academic professionals have responsibilities both to the doctoral program in Neuroscience as well as to other degree programs, for example, zoology. No positions will be eliminated.

B. Flynn
Dept / Program
Head
Response

Justification for retention of Master's Degree Program.

The Master's Program was/is a unit of the Doctoral Neuroscience Program. The Master's Program has not admitted students since 2010. The last Master's was awarded in 2013. The Master's Degree track was terminated (~2012), students are no longer admitted, although the Master's degree remains on the books. At this time there are 2 students enrolled as Off-campus Continuing students. One student is actively completing his project with Dr. Cam Wright (Engineering) and the other student has not made progress in two years. The latter student has the ability to stay enrolled even though they are making no progress towards the degree.

Graduate Neuroscience Students are only admitted to the Doctoral Neuroscience Program. The Master's Program remains as a "default", fall back degree; it is inactive (not admitting students nor devoting either state or federal resources [Neuroscience Center] to the program. The Master's degree fills a need. Students who are admitted into the Doctoral Program and have advanced in good standing, but for some reason (e.g. family, fail final dissertation defense) are not advanced to doctoral candidacy may petition for the Master's Degree. This approach seemed fair to the student, particularly in cases where health issues have prevented the student from finishing the final PhD, but have otherwise met expectations for a Master's Degree.

We have considered alternative strategies whereby a student in this situation could receive a degree award. One idea was to have students then retreat to their mentor's home department for a master's degree. Problem is that not all of the faculty in neuroscience are housed in departments with a suitable master's degree. For example, Pharmacy has a Masters in Health Services Administration but not a research based masters. Veterinary Sciences has a graduate program that is livestock animal disease based. It would not seem fair at all to students to have their degree representation changed and also, the students in Neuroscience would not likely have the coursework required for Health Administration of Livestock Disease in those respective departments. Neuroscience is an interdepartmental and intercollege program and students are admitted to the Neuroscience Program and not home departments. During the past 30 years we have strived to avoid program- department conflicts. As such, the consideration that Neuroscience students in this situation then turn to the master's in Zoology & Physiology as a fall back is not appropriate. This has been brought up in Zoology & Physiology and I agree with their voice that it is not suitable to use a departmental degree as a fall back for Neuroscience students, and even more so when the faculty mentor is in another department.

The proposal to retain the Master's is in the best interest of graduate students who find themselves in a unique situations. I have looked for and discussed with Dr. Hilde alternative strategies to award students with a degree in these circumstances. Retaining, and thereby not

eliminating the Master's Neuroscience is the best solution for rare situations as I have described. This Master's is reserved for students who were admitted to the Doctoral Neuroscience Program, but for unique circumstances, must leave the program prior to completing the PhD. Degree. To be clear, these students would have been admitted to doctoral candidacy and are in good standing. This is not for students who fail out. Last, we have no intent of admitting new students to the Master's program and the master's degree requires no faculty, staff, or classroom time. It is "no cost" to the university.

Academic Program Review: Master's Neuroscience (inactive)

1. Title of Program: Master's in Neuroscience
2. Graduate program
3. Department and College: Interdisciplinary Neuroscience Program;
4. Department Head Name and contact information (phone, email): Bill Flynn, 6-6446, flynn@uwyo.edu

5. Program Productivity:

MASTER'S

Name	start	degree awarded	years to degree	Advisor	Dept	College
Mercy Adetoye	8-06	MS 8-09	3	Skinner	Z&P	A&S
Schamber	8-05	MS 8-08	3	Flynn	Z&P	A&S
Arik Smith	8-08	MS 8-10	2	Skinner	Z&P	A&S
Eileen Marks	8-08	MS 8-11	3	Fox	Vet Sci	Ag
Chen J	8-09	MS 12-12	3	Fox	Vet Sci	Ag
S. Khan	8-10	MS 12-13	3	Schatzl	Vet Sci	Ag
B. Surenhhuu	8-10	MS 12-13	3	Culver	Pharm	HS

N=7

6. The Master's Program was/is a unit of the Doctoral Neuroscience Program. The Master's Program has not admitted students since 2010. The last Master's was awarded in 2013. The Master's Degree track was terminated (~2012), students are no longer admitted, although the Master's degree remains on the books. At this time there are 2 students enrolled as Off-campus Continuing students. The students are not actively involved with faculty nor are they taking courses, but have the ability to stay enrolled even though they are making no progress towards the degree. The students have completed the required coursework but have not written or defended a research thesis. Graduate Neuroscience Students are only admitted to the Doctoral Neuroscience Program. The Master's Program remains as a "default" degree; it is inactive (not admitting students nor devoting either state or federal resources [Neuroscience Center] to the program. The Master's degree fills a need. Students who are admitted into the Doctoral Program and have advanced in good standing, but for some reason (e.g. family, fail final dissertation defense) are not advanced to doctoral candidacy may petition for the Master's Degree. This approach seemed fair to the student, particularly in cases where health issues have prevented the student from finishing the final PhD, but have otherwise met expectations for a Master's Degree.

- a. Program accreditation- not applicable

- b. Credentials of faculty- there are no neuroscience faculty who are specifically associated with the Master's. All of the Neuroscience faculty participating in the Doctoral Neuroscience Degree Program are PhD level, tenure track scientists.
- c. Program reputation- not applicable
- d. Curriculum of major or specialization- there is no longer a curriculum since the Master's Program is inactive.
- e. Distance delivery of program/major not applicable
- f. Quality of Assessment Plan/data
The Doctoral Neuroscience Program has an Assessment Plan and the Program advanced to Tier 2. Since the Master's Program is not active, there is no Assessment Plan for this program.

Strategic Plan- No plan for the Master's to appear in any strategic plan.

7. Mission Centrality: Does the program advance the mission of UW including institutional strategy?

- a. Describe how the program supports the mission, vision and strategic goals of UW.
- b. Describe how the program contributes to other programs across campus (i.e., general education courses, minor or support courses, interdisciplinary program, etc.)

Supports the Doctoral Neuroscience Program in so far that it allows for some degree recognition for those students who have not completed the final requirements for the PhD in Neuroscience, but have met what would be expected for a master's degree (B or better in all classwork, research presentations and publication from their research).

- c. Include placement data for graduates and indicate if graduates are working in the field or not.

Previous graduates with a Master's Degree (indicated above) have entered and since graduated from Medical School (n=2), entered a doctoral neuroscience program at another institution (n=2), or a different doctoral program at UW (n=1), or left the field (n=2; no information on these international students).

8. Cost: Is the program financially viable? Not applicable since not admitting students to the Program nor are there any on-campus Master's students.

- a. Course enrollment- not applicable
- b. Other instructional cost drivers- not applicable
- c. Research expenditures per tenured/tenure-track FTE- -0-

*****Cutoffs for "Low Productivity" Designation -- Degrees Granted**

- Bachelor's Programs: Average – 5 per year; 5 year total: 25
- Master's Programs: Average – 3 per year; 5 year total: 15
- Ph.D. Programs: Average – 1 per year; 5 year total: 5



UNIVERSITY OF WYOMING

College of Arts and Sciences

Dept. 3254 • 1000 E. University Avenue • Room 114, A&S Building • Laramie, WY 82071
Phone (307) 766-4106 • fax (307) 766-2697 • e-mail: asdean@uwyo.edu • www.uwyo.edu/as

16 December 2016

MEMO

TO: Kate Miller
Provost/VPAA

FROM: Paula M. Lutz 
Dean, Arts and Sciences

RE: Program Review for the M.S. in Neuroscience: 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 continued forward, I collected responses 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 four responses to the survey, all from faculty. They comment that this is a "no cost" program and that the strong Ph.D. in Neuroscience needs a "default" or fall back degree where for personal or professional reasons a student does not complete the Ph.D. requirements. I agree. I believe that this can be accomplished with a Neuroscience option or concentration within the M.S. in Zoology.

This fall, I visited Zoology and Physiology (within which Neuroscience is administered). These annual visits give faculty an opportunity to air matters of concern. No questions were posed about this program elimination.

It is still the recommendation of the Dean that the M.S. in Neuroscience be eliminated and replaced with a Neuroscience option or concentration within the M.S. in Zoology.

Anne M. Alexander

From: Autumn N Jensen
Sent: Monday, October 17, 2016 11:28 AM
To: Program Review - Academic Affairs Office
Subject: Academic Program Elimination Proposals

The programs listed below are the ones that you really should not cut. All of those programs are useful in the world today. And frankly, Wyoming needs all of the positive culture that it can get and these programs do just that. They enrich our campus in ways that other programs can't. If money is the issue, take it from the football team. They don't need to stay in hotels for home games. They don't need new locker rooms. They don't need to eat steaks on a regular basis. This school claims that academics comes first and sports second, but if you look at the budget it doesn't appear that we practice what we preach. By cutting these programs, the school sends a clear message to all of the students. A message that you are willing to cut valuable programs and take away from our education because you don't feel like rearranging your budget a bit.

- [MA German](#)
- [MA French](#)
- [MS Neuroscience](#)
- [BA Russian](#)
- [MA Sociology](#)
- [PhD Statistics](#)

Subject: MS Neuroscience - comments

Date: Monday, November 7, 2016 at 11:49:02 AM Mountain Standard Time

From: Spencer Sharpe

To: Program Review - Academic Affairs Office

Dear Review Committee,

The comments below are in reference to "Proposal to Eliminate Academic Program, Pursuant to UW Regulation 6-43, M.S.Neuroscience"

1. I understand that "no student shall be adversely affected". Bill Flynn and my adviser Cameron Wright have notified me of the need to defend tentatively by the end of the academic year. I would ask the review committee to accept a thesis submission deadline for the end of the academic year, and a defense deadline for the end of the summer term.
2. My thesis is focused on artificial neural networks. This is a computational field, and my work has been conducted on the UW Advanced Research Computing Center's HPC cluster. The work I am doing might not fall entirely within the scope of research defined under Zoology & Physiology.
3. The only other lab on campus actively conducting research in artificial neural networks is the Evolving AI lab in Computer Science. I was part of the Evolving AI lab for a year, and despite the great work going on there I believe it is very important for UW to seek diversity in the field of machine learning and artificial intelligence. It is an increasingly important area of research, and should not be owned by single lab.
4. I would suggest the creation of a full Data Science major in partnership with the UW Advanced Research Computing Center.

Regards,
Spencer Sharpe

Subject: MS neuroscience elimination

Date: Wednesday, October 26, 2016 at 8:33:35 AM Mountain Daylight Time

From: Jonathan H. Fox

To: Program Review - Academic Affairs Office

Dear Dr.Kate Miller: I have had 2 students graduate with a masters in neuroscience in the last 8 years. Here are my thoughts on elimination of this program.

Pros:

- It will eliminate a degree that is little utilized

Cons:

- Occasionally students leave the PhD program after having completed enough research and class credits to obtain a master's degree. Without this degree the students will not be able to obtain a neuroscience degree. Also, obtaining a master's degree in another discipline will be problematic due to significant differences in class pre-requisites. If the program is eliminated there needs to be a mechanism for deserving students to still obtain a master's degree from this university. My suggestion is that this mechanism should be in place at the time of program elimination.
- I am not aware of any extra administrative costs relating to this degree

I am a big supporter of the various inter-departmental degree programs at this university. I think it makes a lot of sense especially for smaller universities. Faculty members not infrequently have a research focus that fits better with an interdepartmental program rather than the traditional departmental focus. These programs also foster cross-departmental collaborations which can enable competitive external grant applications. For departments to support the inter-departmental programs they need to receive some credit for having a student based in their department.

Sincerely,

Jonathan Fox
Professor
Veterinary Sciences