



## ACADEMIC PROGRAM PROPOSAL FORM

**DIRECTIONS:** Use this form when proposing a new major or primary field of study, new emphasis, new degree program, or new certificate of achievement.

**DATE SUBMITTED:** 10/1/2014

*Date of AAC Approval:*  
December 3, 2014

**INSTITUTION:** UNR

**REQUEST TYPE:**

- New Degree
- New Major or Primary Field of Study
- New Emphasis
- New Certificate of Achievement (AAC approval only)

*Date of Board Approval:*

**DEGREE** (i.e. Bachelor of Science): MS/PhD

**MAJOR** (i.e. Animal Science): Neuroscience

**EMPHASIS** (i.e. Equine Studies): N/A

**CREDITS TO DEGREE:** 30/72

**CERTIFICATE OF ACHIEVEMENT:** N/A

**PROPOSED SEMESTER OF IMPLEMENTATION:** Fall, 2015

---

---

**Action requested:**

This proposal is to create a new interdisciplinary MS/PhD program in Integrative Neuroscience

---

**A. Brief description and purpose of proposed program**

Neuroscience is widely recognized as among the most significant frontiers in modern science. UNR has invested heavily in faculty lines and resources for neuroscience research, and these are spread across many campus units and UNSOM. Moreover, the university has acquired major funding for neuroscience research through both individual investigator grants and the recently awarded NIH COBRE for Integrative Neuroscience. Thus the infrastructure, expertise, and institutional interest in neuroscience are all currently very strong. In terms of academic programs, UNR has already mounted an interdisciplinary BS degree in neuroscience that is meeting the educational needs of undergraduates. Introduced 6 years ago, the major has proven extremely popular and successful, with ~300 current majors and accelerating growth (e.g. >25% increase in majors in the the last year alone). This proposal is designed to fill a final critical gap in neuroscience initiatives at UNR, by providing advanced training in neuroscience through the development of a graduate degree program. As described below, this will allow UNR to offer an educational opportunity that is already well established in nearly all other major research universities in the US, and will provide an advanced

program that will both enhance and benefit from the current undergraduate and research initiatives in neuroscience.

**B. Statement of degree or program objectives**

The program is designed to provide training in fundamental concepts and methods in modern neuroscience. The program will emphasize interdisciplinary and integrative approaches which are seen as central to major advances in the field. The program will also emphasize the development of research skills that will position students to be competitive in academic and research-oriented careers. Specific objectives include training students so that they achieve: 1) comprehensive understanding and ability to critically evaluate current knowledge and theories in neuroscience; 2) research skills to effectively identify, design and carry out independent research in the field; 3) professional development including communication and teaching, grant-writing, and ethics. For MS students the objective is to provide a foundation in core concepts in neuroscience and research skills that will position them to pursue advanced graduate studies or careers in industry. For PhD students the objective is to in addition provide advanced specialized training and develop their skills as independent researchers to prepare them for academic careers or advanced industry positions.

**C. Plan for assessment of degree or program objectives**

Participating faculty will meet annually to review and evaluate the program and curriculum and contribute to an assessment report prepared by the director. This will include monitoring program performance metrics including the publications, conference presentations, and position placements of graduating students. A curriculum committee will also be established to monitor and modify course requirements, content, and scheduling as needed to fulfill the program objectives. In the 3<sup>rd</sup> and 5<sup>th</sup> year external consultants will be enlisted to review the program and provide an evaluation and recommendations.

**D. Plan for assessment of student learning outcomes and the use of this data for program improvement**

Student learning outcomes for both MS and PhD students will include the following SLO's coinciding with the specific program objectives identified in section B.

Objective 1) comprehensive and critical understanding of current knowledge and theories in neuroscience

SLO 1: Students will be able to identify the various neuroscience theoretical perspectives and major findings of research, and compare and contrast them

SLO 2: Demonstrate an in-depth awareness of several areas within the field, e.g. anatomical, behavioral, developmental, clinical, comparative, or computational

SLO 3: critically evaluate neuroscience research

SLO 4: For PhD students, demonstrate advanced knowledge of the theories, findings and current literature in a subdiscipline in the field

Objective 2) research skills to effectively identify, design and carry out independent research in the field.

SLO 5: Design and conduct research with an effective use of technological resources and appropriate statistical analyses

SLO 6: For PhD students, design and execute research aims addressing a substantive question in the field that demonstrates technical mastery of appropriate methodologies

Objective 3) professional development including communication and teaching, grant-writing, and ethics.

SLO 7: Demonstrate effective teaching and professional communication and grant-writing skills

SLO 8: Apply ethical practices in research and professional conduct

Assessment will include successful and timely completion of course work and qualifying exams, and evaluations by the faculty advisor and thesis committee of student performance and of theses and

dissertations. Participating faculty will meet annually to review and evaluate the progress of individual students including on their theses, dissertations and coursework, and to ensure that adequate resources (e.g. teaching opportunities) are in place to allow students to meet the learning objectives. We will also track placement of graduating students and job trends and opportunities in the discipline to ensure students are prepared for specific career opportunities.

## **E. Contribution and relationship of program objectives to**

### **i. NSHE Master Plan**

The proposed program closely aligns with the NSHE plan to develop programs that are both high-quality and cost-efficient, and which increase the potential for extramurally funded research.

### **ii. Institutional mission**

As defined in the current draft of the 2015 strategic plan, "The University of Nevada Reno mission is to promote the social and economic development of the State of Nevada through relevant, accessible instructional, research and service programs." The proposed doctoral program directly supports the mission of providing training in a field which is not only relevant but critical to addressing many of the health, economic, and societal challenges facing the state and nation. It should be emphasized again that this training is currently provided by nearly all other major research universities in the US. This includes the UNR "peer institutions" of the Universities of Oregon, Utah, New Mexico, Arizona, Idaho, and Wyoming, Washington State and Montana State. The lack of a comparable program in Nevada thus represents a glaring gap in our educational mission.

### **iii. Campus strategic plan and/or academic master plan**

The creation of a neuroscience doctoral program directly supports a number of objectives in the developing 2015 strategic plan. These include the following goals listed in Draft 1 of the plan:

1. Invest in select new programs to be on the leading edge of innovation and economic development.
2. Move toward a Carnegie classification of "Comprehensive Doctoral, Arts and Sciences/Professions—Balanced, Very High Research University."
3. Both graduate and undergraduate education and research will encourage multi-disciplinary approaches
4. Objective 1.7 Increase the number of PhD students who graduate with cross-disciplinary expertise.
5. Objective 2.2 Increase the number of doctoral degrees awarded.

### **iv. Department and college plan**

The proposed program will include faculty members from a wide range of departments and colleges, with courses drawn primarily from existing graduate courses in Psychology and Biology. (The undergraduate neuroscience degree is also jointly offered through these two departments.) Developing strengths in neuroscience is central to the strategic plans of both departments, and as noted below, both have targeted several new hires in neuroscience. Developing strong cross-disciplinary programs that can garner extramural support is also central to the strategic plans of the colleges. For example, the neuroscience doctoral program will meet several of the stated goals in the CLA strategic plan including: enhance and promote faculty scholarly and creative activity (Goal 2); Sustain and develop graduate programs (Goal 3); increase interdisciplinary collaboration (Goal 7); and develop and strengthen the pursuit of external funding (Goal 10).

**v. Other programs in the institution**

The graduate program will bridge naturally with the undergraduate BS in neuroscience and allow UNR to provide a full curriculum and training for career opportunities in the field. The program will also fit closely with neuroscience research initiatives on campus such as the Center for Integrative Neuroscience, which includes access to core research facilities and funding for graduate assistantships. Finally, the program will complement and enhance related graduate programs by adding a cohort of strong students who will also participate in many of the courses and training opportunities through these programs. For example, the Cognitive and Brain Sciences graduate program in Psychology and the interdisciplinary Molecular Biosciences program includes many graduate students already carrying out neuroscience research. Moreover, the program will complement and enhance plans to develop Clinical Neuroscience programs through UNSOM and Renown.

**vi. Other related programs in the System**

Like UNR, UNLV includes graduate programs with a neuroscience emphasis. However, there is currently no formal graduate program in neuroscience within NSHE.

**F. Evaluation of need for the program**

**i. Intrinsic academic value of program within the discipline**

The field of neuroscience is currently one of the most active and important areas of basic and clinical research, as evidenced by the many recent Nobel Laureates in neuroscience, by the "Decade of the Brain" and "Blueprint for Neuroscience Research" funding focus of the NIH, and by the government's recent "BRAIN Initiative," which including funding for neuroscience research through NIH, NSF, and DARPA. Currently NIH alone provides ~\$4.5 billion annually for neuroscience research. This funding priority is not surprising, for advances in neuroscience are widely recognized as crucial to addressing a wide range of health challenges including the growing epidemic of age-related neurological impairments. Neuroscience research is also fundamentally impacting basic sciences from biology to engineering to psychology and is central to current computational and "big data" initiatives. The importance of understanding basic neural mechanisms has been further embraced by a wide range of traditional academic disciplines leading to entirely new areas of study such as neuroeconomics and neuroesthetics. Consequently there are now few if any areas of academics where neuroscience is not leaving a major mark.

**ii. Evidence of existing or projected local, state, regional, national and/or international need for program**

While relatively uncommon 40 years ago, almost all major universities and states now have graduate programs in neuroscience, with many offering multiple programs in the field. The lack of a graduate program in Neuroscience at UNR thus represents an obvious deficiency in our curriculum. The Society for Neuroscience (SfN) currently includes 40,000 members, making it one of the largest scientific organizations in the US. SfN conducts periodic surveys of neuroscience graduate programs. The 2009 survey sampled 134 SfN institution member programs, and showed that program growth and demand for the field remains very high, and that the programs recruit a very strong and diverse pool of applicants ([http://www.sfn.org/index.aspx?pagename=professionalDevelopment\\_ndpsurvey](http://www.sfn.org/index.aspx?pagename=professionalDevelopment_ndpsurvey)). The emerging importance and popularity of the field is further evidenced by a recent NIH survey of doctoral students funded by NIH. While most biomedical fields have seen little or modest growth, over the last decade the increase in the number of neuroscience doctorates has been truly explosive, with doctoral awards in neuroscience more than doubling between 2001 and 2011 (see supplementary material).

**iii. If this or a similar program already exists within the System, what is the justification for this addition**

A number of departments at UNR offer PhDs with emphases in focused areas of brain sciences. These include the Cognitive and Brain Sciences Graduate Program in Psychology and the Cellular and Molecular Biology Program. However, within NHSE there is currently no formal training program in neuroscience that bridges across these subdisciplines.

**iv. Evidence of employment opportunities for graduates (state and national)**

The rapid acceleration of neuroscience programs and doctorates is consistent with high employment demand within the field. A recent article in Science reviewed job trends and prospects for advanced neuroscience degrees. Academic positions are a primary source of employment, and relative to most other disciplines, NIH funding for neuroscience research is high. However, recruitment of neuroscience trainees is also high in industry. For example, the pharmaceutical industry is a major employer of neuroscientists. Additional employment opportunities include "biotech companies, venture capital firms, scientific consulting firms, medical and scientific journals, law firms dealing in intellectual property, science-focused nonprofit organizations and foundations, government agencies, and K-12 schools" ([http://sciencecareers.sciencemag.org/career\\_magazine/previous\\_issues/articles/2011\\_11\\_18/car.edit.a1100128](http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2011_11_18/car.edit.a1100128)).

**v. Student clientele to be served (Explain how the student clientele is identified)**

The focus of the program will be on providing research-intensive training to graduate students primarily interested in pursuing careers in academics and in research, including industry and health sciences. Students will be recruited internationally. However, as noted UNR already has in place a highly successful undergraduate BS degree in neuroscience with a large number of majors. Thus this program alone is likely to provide a very strong pool of in-state applicants who wish to continue to pursue an advanced degree in neuroscience.

The program will be composed of separate MS and PhD tracks. Students entering the program for an MS degree will receive training in the foundations of neuroscience and associated methods and will complete an MS thesis. The training will prepare these students for advanced graduate training or positions in industry.

Students admitted to the PhD program will complete a track of foundation courses and research experience during the first two years, and then specialize within a chosen subdiscipline for their research and training in subsequent years, culminating in a dissertation. The training will prepare them for postdoctoral and academic or advanced research positions in industry or health sciences. PhD students are not be required to complete an MS thesis en route to their doctoral degree. A qualifying exam will be administered at the end of the second year, which the student must pass to advance to candidacy as a doctoral student. Students who fail the qualifying exam or otherwise wish to terminate their degree will be given the option of a non-thesis MS degree.

Students with a prior MS or MA may be admitted to the PhD program, but must meet the requirements for the PhD. Courses from their previous degree satisfying these requirements can be transferred based on review and approval by the program director.

**G. Detailed curriculum proposal**

**i. Representative course of study by year (options, courses to be used with/without modification; new courses to be developed)**

Note: the program will initially be mounted entirely with existing courses. Thus no new courses are required or proposed.

Note: SLO column indicates how each course contributes to the SLO's identified in section D.

MS Course Requirements (30 credits)

offered through	course	credits	SLO
BIOL 675	Neurobiology	3	1,2,3
PSY 721	Advanced Psychophysiology	3	1,2,3
PSY 706 or equiv	Statistics	3	3,5
PSY/CS/BCH	Computing or bioinformatics options	3	5
PHAR 725	Ethics and scientific research	2	8
BIO/PSY/SOM	Journal club/ research presentations	1	1,2,3,7
BIO/PSY 797	Thesis research	6	3,5,8
BIO/CMB/PSY	Electives	9	1,2,3,5

PhD Course Requirements (72 credits)

offered through	course	credits	SLO
BIOL 675	Neurobiology	3	1,2,3
PSY 721	Advanced Psychophysiology	3	1,2,3
PSY 706 or equiv	Statistics	3	3,5
PSY/CS/BCH	Computing or bioinformatics options	3	5
PHAR 725	Ethics and Scientific Research	2	8
BIO/PSY/SOM	Journal club/ research presentations	1	1-4,7
BIO/PSY/SOM	First year project	6	3,5,8
BIO/PSY/SOM	Second year research	6	3,5,8
BIO/PSY 799	Dissertation research	24	3-6,8
BIO/CMB/PSY	Electives	21	1-7

Program electives

Cognitive Neuroscience (PSY)

PSY 627	Computer applications	3
PSY 709	Comparative sensory neuro	3
PSY 720	Perception	3
PSY 729	Memory	3
PSY 755	Individual reading	mult
PSY 761-3	Special topics	mult

Cellular and Molecular Neuroscience (BIO-CMB)

CMB 710	Molecular cell biology	4
BCH 704	Molecular genetics	3
BCH 706	Functional genomics	3
BCH 709	Introduction to bioinformatics	3
BIOL 677	Genes, Brain and Behavior	3
BIOL 681	Principles of animal behavior	3
BIOL 654	Genomic conflict, epigenetics	3
BIOL 666	Developmental biology	3
BIOL 691	Independent Study	3
BIOL 705	Current topics in cell mol bio	mult
BIOL 711	Advanced cellular biology	3
PHAR 710	Molecular Pharmacology	3

MS Representative schedule

fall 01

BIOL 675	Neurobiology	3
PSY 721	Advanced psychophysiology	3
BIO/PSY/SOM	Elective	3

spring 01

PSY/CS/BCH	Computing or bioinformatics	3
BIO/PSY/CMB	Elective	3
BIO/PSY/SOM	Elective	3

fall 02

PSY 706 or equiv	Statistics	3
BIO/PSY 797	Thesis reseach	3

spring 02

PHAR 725	Ethics and scientific research	2
BIO/PSY/SOM	Journal club	1
BIO/PSY 797	Thesis research	3

PhD Representative schedule

fall 01

BIOL 675	Neurobiology	3
PSY 721	Advanced psychophysiology	3
BIO/PSY/SOM	First year project	3

spring 01

PSY/CS/BCH	Computing or bioinformatics	3
BIO/PSY/CMB	Elective	3
BIO/PSY/SOM	First year project	3

fall 02

PSY 706 or equiv	Statistics	3
BIO/PSY/CMB	Elective	3
BIO/PSY/SOM	Research/Independent study	3

spring 02

PHAR 725	Ethics and scientific research	2
BIO/PSY/CMB	Elective	3
BIO/PSY/SOM	Journal club	1
BIO/PSY/SOM	Research/Independent study	3

fall 03

BIO/PSY/CMB	Elective	3
799	Dissertation research	6

spring 03

BIO/PSY/CMB	Elective	3
799	Dissertation research	6

fall 04

BIO/PSY/CMB	Elective	3
799	Dissertation research	6

spring 04

BIO/PSY/CMB	Elective	3
799	Dissertation research	6

ii. Program entrance requirements

The program will follow the GPA, GRE, and TOEFL entrance requirements of the Graduate School. Because of the highly interdisciplinary nature of the field, we expect to attract students with diverse backgrounds and training, so that preparation for the program will be determined on an individual basis. However, all students will be expected to have a basic background in science including a minimum of 3 semester credits each in Calculus, Physics, Chemistry, and Biology. Students lacking this background may be admitted with the provision that appropriate remedial coursework is completed.

**iii. Program completion requirements (credit hours, grade point average; subject matter distribution, preprogram requirements)**

Students will complete a minimum of 30 (MA) or 72 credits (PhD) with a GPA of 3.00 or higher. The curriculum is designed to expose all students to core concepts and methods in the first two years while allow them to focus on research and training within specific subdisciplines in subsequent years.

**iv. Accreditation consideration (organization (if any) which accredits program, requirements for accreditation, plan for attaining accreditation - include costs and time frame)**

N/A

**v. Evidence of approval by appropriate committees of the institution**

The pre-proposal for the program was approved in the spring of 2012. (Please see supplementary material.) The full proposal has been reviewed and approved by the Departments of both Biology and Psychology. (See letters of support.)

**H. Readiness to begin program**

**i. Faculty strengths (specializations, teaching, research, and creative accomplishments)**

UNR already has a strong and diverse cohort of faculty actively engaged in neuroscience research and education. We have identified 43 faculty members spread throughout UNR and UNSOM who have indicated they will participate in the program. (See supplementary information). This number will be further expanded by the planned addition of the Department of Neurology at UNSOM. These individuals are highly active and productive researchers with strong records of extramural funding. Moreover, many of them are already teaching graduate-level courses in the neurosciences that will be incorporated into the curriculum.

**ii. Contribution of new program to department's existing programs (both graduate and undergraduate) and contribution to existing programs throughout the college or university**

As noted the graduate program will closely connect to the undergraduate Neuroscience BS Degree Program and expand this degree to provide advanced training in the field. It will complement and enhance existing PhD programs in departments such as Psychology and Biology by recruiting an additional pool of students who will take courses through these departments. The program will also better position both individual faculty and programs to pursue funding opportunities through research, infrastructure, and training grants, including NIH training grants that specifically target student diversity in the neurosciences.

**iii. Completed prior planning for the development of the program (recent hires, plans for future hires, securing of space, curricular changes, and reallocation of faculty lines)**

UNR has targeted a large number of hires toward building strength in neuroscience. For example, 4 of the last 5 new hires in Psychology have been in cognitive neuroscience, and this year Biology successfully recruited 3 junior faculty in neuroscience. Moreover, 3 new neuroscience researchers were recruited in SOM as project leaders in the Cell Biology COBRE, and there are institutional commitments for a further hire in the Integrative Neuroscience



COBRE. These new faculty add to already strong pools of expertise in neuroscience across the campus. As an interdisciplinary program all participating faculty will maintain their primary appointments through their home departments.

**iv. Recommendations from prior program review and/or accreditation review teams**

N/A

**v. Organizational arrangements that must be made within the institution to accommodate the program**

Some faculty members participating in the program will assume additional teaching and service obligations including research supervision, thesis and dissertation committees, team-taught courses, potential program committees or administration. There will be a need to recognize contributions that are specific to the neuroscience program in their role statements and annual evaluations.

**I. Resource Analysis**

**i. Proposed source of funds (enrollment-generated state funds, reallocation of existing funds, grants, other state funds)**

Funds are requested to support graduate assistantships and a director stipend and administrative assistance according to the standard formula of the Graduate School. We anticipate that most students will be supported through faculty research grants. Notably the Integrative Neuroscience COBRE alone currently provides funding for roughly 10 full-time graduate research assistants, and many of the participating faculty have their own grants which include graduate student support.

**ii. Each new program approved must be reviewed for adequate full-time equivalent (FTE) to support the program in the fifth year. Indicate if enrollments represent 1) students formally admitted to the program, 2) declared majors in the program, or 3) course enrollments in the program.**

**a. (1) Full-time equivalent (FTE) enrollment in the Fall semester of the first, third, and fifth year.**

1st Fall semester PhD: 4, MS: 2 (students formally admitted)

3rd Fall semester PhD: 12, MS: 5 (new and continuing)

5th Fall semester PhD: 20, MS: 5 (new and continuing)

**(2) Explain the methodology/assumptions used in determining projected FTE figures.**

We anticipate admission of roughly 4 new students per year, limited in part by available graduate assistantship lines

**b. (1) Unduplicated headcount in the Fall semester of the first, third, and fifth year.**

1st Fall semester PhD: 4, MS: 2

3rd Fall semester PhD: 12, MS: 5

5th Fall semester PhD: 20, MS: 5

**(2) Explain the methodology/assumptions used in determining projected headcount figures.**

Based on an initial projected enrollment of 4 new students per year

**iii. Budget Projections – Complete and attach the Five-Year Budget Projection Table.**  
please see attached

**J. Facilities and equipment required**

**i. Existing facilities: type of space required, number of assignable square feet, space utilization assumptions, special requirements, modifications, effect on present programs**

The program will draw on faculty who already have established positions and office and lab space through their various home departments. Space is also available through the COBRE for Integrative Neuroscience, which includes common lab space and a computer lab for research and instruction.

**ii. Additional facilities required: number of assignable square feet, description of space required, special requirements, time sequence assumed for securing required space**

While not immediately necessary, office space for graduate students and potentially for the director or administrative assistant will be required as the program grows.

**iii. Existing and additional equipment required**

The recently awarded COBRE for Integrative Neuroscience has brought an enormous number of new resources for research and training, allowing both students and faculty access to modern methodologies in neuroscience. These include a suite of neuroimaging tools through the COBRE's Neuroimaging Resources Core, which provides state-of-the-art equipment for noninvasive imaging of brain activity. Most important among these is a newly developed partnership with the MRI facility at Renown Hospital to provide UNR researchers access to functional MRI, a technique which has revolutionized cognitive neuroscience. The COBRE also provides access to a new confocal microscope and to a continuously expanding database of patients with well characterized neurological conditions to facilitate research with special populations. These facilities are all campus-wide resources. Importantly, while the COBRE is subject to competitive renewal, these resources are also "permanent" additions to UNR and include institutional commitments to sustain them. The new availability of these resources will thus provide unprecedented training opportunities for UNR students, and conversely, the graduate program will promote fully leveraging the return on the institution's commitment to mounting these resources.

**K. Student services required – Plans to provide student services, including advisement, to accommodate the program, including its implications for services to the rest of the student body**

Student advising will be provided by the program director and the student's primary research advisor. This will not impact the rest of the student body.

**L. Consultant Reports – If a consultant was hired to assist in the development of the program, please complete subsections A through C. A copy of the consultant's final report must be on record at the requesting institution.**

**i. Names, qualifications and affiliations of consultant(s) used**

N/A

**ii. Consultant's summary comments and recommendations**

N/A

**iii. Summary of proposer's response to consultants**

N/A

**M. Articulation Agreements**

**i. Articulation agreements were successfully completed with the following NSHE institutions. (Attach copies of agreements)**

N/A

**ii. Articulation agreements have not yet been established with the following NSHE institutions. (Indicate status)**

N/A

**iii. Articulation agreements are not applicable for the following institutions. (Indicate reasons)**

A comparable graduate program is not currently offered by other NSHE institutions

**N. Summary Statement**

This proposal is to develop a new interdisciplinary MS/PhD program in Neuroscience for the UNR campus. The degree is designed to provide a strong foundation and integration of key substantive areas in brain sciences, from cellular mechanisms to cognition and behavior, while also allowing students to focus advanced training in specific subdisciplines. The program will draw on faculty and courses spanning multiple departments and colleges, a model that is widely used for neuroscience graduate programs at other universities in the US. It will also draw on the substantial new resources for graduate student funding and research infrastructure through the COBRE for Integrative Neuroscience and other investigator-initiated grants and labs already on campus. It will bridge with and expand the current undergraduate BS degree in Neuroscience to provide advanced training in the field. This advanced training will prepare students for research careers in a variety of fields in academics, industry, and health sciences. National trends have shown that the interest and need for this training has seen truly explosive growth over the last decade.

**New Academic Program Proposal  
Five-Year Budget Projection**

Institution: UNR Program: Neuroscience MS/PhD program Semester of Implementation: Fall 2015

**DIRECTIONS:** Complete the following cost estimates for the first, third, and fifth year budget projections for the proposed new program in Section A. Costs for the third and fifth year are cumulative. If the total budget for the program is not reflected in the "Existing" or "New" categories, please provide further explanation in the space provided below (EXPLANATION). Any "new" costs must be noted by source in Section B.

STUDENT FTE	Year 1: <u>4</u>				Year 3: <u>12</u>				Year 5: <u>20</u>			
	Year 1/Start-up				Year 3				Year 5			
Section A.	Existing <sup>1</sup>	New <sup>2</sup>	Total	FTE	Existing <sup>1</sup>	New <sup>2</sup>	Total	FTE	Existing <sup>1</sup>	New <sup>2</sup>	Total	FTE
<b>PERSONNEL</b>												
Director stipend	4,000	0	4,000	0.0	4,000	0	4,000	0.0	4,000	0	4,000	0.0
Faculty (salaries/benefits) <sup>3</sup>	24,282	0	24,282	0.2	50,698	0	50,698	0.4	132,079	0	132,079	1.1
Graduate Assistants	91,898	0	91,898	4.0	91,898	190,926	282,824	12.0	282,824	190,926	473,750	20.0
Support Staff	2,380	0	2,380	0.1	3,714	0	3,714	0.1	5,153	0	5,153	0.1
Fellowships/Scholarships	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
<b>Personnel Total</b>	\$122,561	\$0	\$122,561	4.3	\$150,310	\$190,926	\$341,236	12.5	\$424,056	\$190,926	\$614,982	21.2
<b>OTHER RESOURCES</b>												
Library Materials (printed)	0	0	0		0	0	0		0	0	0	
Library Materials (electronic)	0	0	0		0	0	0		0	0	0	
Supplies/Operating Expenses	1,000	0	1,000		2,250	0	2,250		2,250	0	2,250	
Equipment	951,689	0	951,689		0	0	0		0	0	0	
Other Expenses	0	0	0		0	0	0		0	0	0	
<b>Other Resources Total</b>	\$952,689	\$0	\$952,689		\$951,689	\$0	\$951,689		\$951,689	\$0	\$2,250	
<b>PHYSICAL FACILITIES</b>												
Construction	0	0	0		0	0	0		0	0	0	
Major Renovation	0	0	0		0	0	0		0	0	0	
Other Facility-Related Expenses	0	0	0		0	0	0		0	0	0	
<b>Physical Facilities Total</b>	\$0	\$0	\$0		\$0	\$0	\$0		\$0	\$0	\$0	
<b>TOTAL</b>	\$1,075,249	\$0	\$1,075,249		\$1,101,999	\$190,926	\$1,292,925		\$1,375,744	\$190,926	\$617,232	
<b>Section B.</b>	↓				↓				↓			
<b>EXPLANATION OF "NEW" SOURCES<sup>2</sup></b>	Amount		%		Amount		%		Amount		%	
State Support		0			42,384	22.2%	42,384	22.2%	42,384	22.2%	42,384	22.2%
Federal Grants/Contracts		0			148,542	77.8%	148,542	77.8%	148,542	77.8%	148,542	77.8%
State Grants/Contracts		0			0	0.0%	0	0.0%	0	0.0%	0	0.0%
Private Grants/Contracts		0			0	0.0%	0	0.0%	0	0.0%	0	0.0%
Private Gifts		0			0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other (please specify)		0			0	0.0%	0	0.0%	0	0.0%	0	0.0%
<b>TOTAL</b>		\$0		0.0%		\$190,926		100.0%		\$190,926		100.0%

<sup>1</sup>Resources re-allocated from existing programs in Year 1 should be noted in the "Existing" column. In addition, "New" costs from Year 1 that will continue in the third and fifth year should also be noted in the third and fifth year as "Existing."

<sup>2</sup>Any "New" resource utilized to fund a new program must include the source to be provided in the "Explanation of New Sources" section. Total "New" sources for each year must equal the total for each year under "Explanation of New Sources."

<sup>3</sup>Budget estimates for faculty salaries and benefits must include estimated merit and COLA increases in Year 3 and Year 5.

**Explanation:**

**Faculty: No new faculty lines or courses are proposed. Salaries are based on additional student load in existing courses, assuming average salary from Bio and Psy (CBS) and average teaching load of 3 courses/yr. Increases include average projected merit increases but no COLA.**

Yr 1	(4 students) x (4 courses/yr) x (1/10 students per class) x (\$113824 avg fac salary) x (.4 teaching teaching effort) / 3	\$ 24,282.45	0.21 FTE
Yr 3	(8 students) x (4 courses/yr) x (1/10 students per class) x (\$118824 avg fac salary) x (.4 teaching teaching effort) / 3	\$ 50,698.24	0.43 FTE
Yr 5	(20 students) x (4 courses/yr) x (1/10 students per class) x (\$123824 avg fac salary) x (.4 teaching teaching effort) / 3	\$ 132,078.93	1.07 FTE

\* assumes average teaching load is 3 courses/year

**Grad Assts: 6 university-funded GA lines are proposed (based on levels proposed by the Graduate School). We propose phasing these in with 2 lines at the start and then 1 added each of years 2-5. Additional new GA funding is projected from investigator and center grants. University lines should be new for the program and not reallocated from existing programs.**

Yr 1 - grant funded <sup>1</sup>	(2 students) x (\$1550 x 12 mos + \$2790 fringe + \$3367 tuition)		\$ 49,514.00	Existing (2)
Yr 1 - state funded <sup>2</sup>	(2 students) x (\$1550 x 10 mos + \$2325 fringe + \$3367 tuition)		\$ 42,384.00	Existing (2)
Yr 3 - grant funded <sup>2</sup>	(8 students) x (\$1550 x 12 mos + \$2790 fringe + \$3367 tuition)	\$	148,542.00	New (6)
Yr 3 - state funded <sup>2</sup>	(4 students) x (\$1550 x 10 mos + \$2325 fringe + \$3367 tuition)	\$	42,384.00	New (2)
Yr 5 - grant funded <sup>2</sup>	(14 students) x (\$1550 x 12 mos + \$2790 fringe + \$3367 tuition)	\$	148,542.00	New (6)
Yr 5 - state funded <sup>2</sup>	(6 students) x (\$1550 x 10 mos + \$2325 fringe + \$3367 tuition)	\$	42,384.00	New (2)
	State supported GAs are all new lines that will not draw from existing programs.		\$ 84,768.00	Existing (4)

**Support Staff: admin support will be provided through and as proposed by the Graduate School. Director stipend is as proposed by the Graduate School.**

Yr 1 Grad School AA III	.05 FTE x \$47,604	\$	2,380.20
Yr 3 Grad School AA III	.075 FTE x \$49,527	\$	3,714.53
Yr 5 Grad School AA III	0.1 FTE x \$51,528	\$	5,152.80

**Equipment: No new equipment is requested. Existing equipment includes resources already purchased and maintained by the Neuroscience COBRE. Current library holdings include all journal subscriptions and materials necessary for the program.**

Neuro COBRE core shared use neuroimaging equipment (High density EEG, fNIRS, fMRI, confocal microscope) \$ 951,688.50

## Neuroscience Faculty

The following UNR faculty members are engaged in Neuroscience-related research and have expressed interest in being affiliated with the proposed graduate program. Inclusion of faculty from the planned Department of Neurology at UNSOM is forthcoming.

### Psychology (CLA):

Michael Webster  
Michael Crognale  
Jeff Hutsler  
Jacqueline Show  
Lars Strother  
Fang Jiang  
Gideon Caplovitz  
Marian Berryhill  
Linda Hayes

### Philosophy (CLA):

Thomas Nickles

### Biology (COS):

Grant Mastick  
Thomas Kidd  
Scott Clark  
Alexander van der Linden  
Alexander Keene  
Guy Hoelzer  
Matthew Forister  
Anne Leonard  
Yong Zhang  
Pedro Miura  
Dennis Mathew

### Physiology and Cell Biology (SOM):

Kenton Sanders  
James Kenyon  
Christopher von Bartheld  
Terence Smith

Robert Renden

Sean Ward

Violeta Mutafova-Yambolieva

Thomas Gould

### Pharmacology (SOM)

David Westfall (emeritus)

Gale Craviso

Ruben Dagda

### Microbiology and Immunology (SOM)

Ken Hunter

### Psychiatry (SOM)

Brian Kirkpatrick

### Electrical and Biomedical Engineering (COEN):

Nelson Publicover (emeritus)

Yantao Shen

Xiaoshan Zhu

### Computer Science (COEN):

George Bebis

Mircea Nicolescu

Monica Nicolescu

Fred Harris

David Feil-Seifer

### Agriculture, Nutrition, and Veterinary Science (CABNR)

Stan Omaye

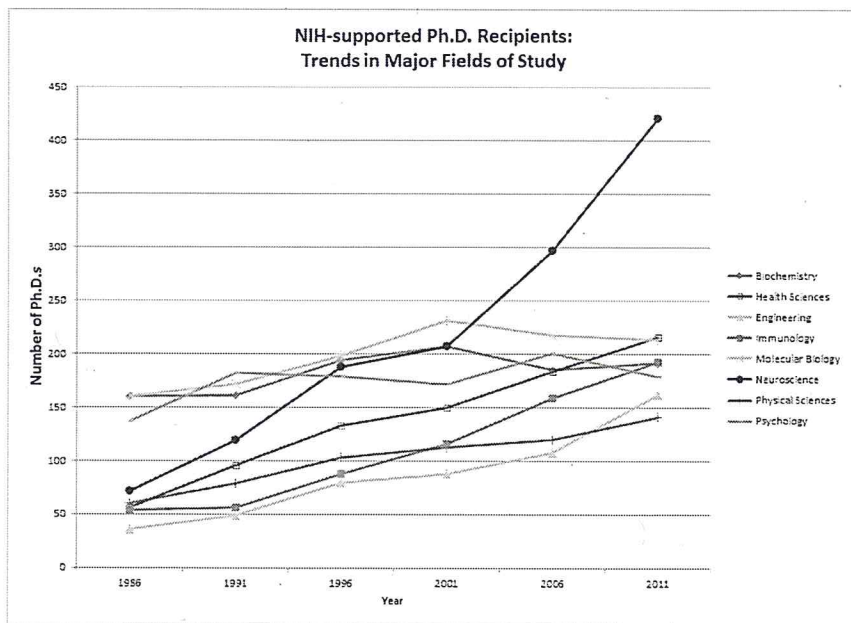
## Rock Talk

Helping connect you with the NIH perspective

Posted on November 14, 2013 by Sally Rockey

### What's Trending in PhD Fields of Study for NIH Trainees and Fellows?

As I mentioned in an earlier post, the NIH Data Book on RePORT.nih.gov contains biomedical workforce data from NIH databases as well as data from national surveys sponsored by NSF and NIH. I thought it would be interesting to highlight the data on what's trending for NIH-supported trainees and fellows receiving PhDs, in terms of fields of study. The chart below uses NIH trainee and fellow records and self-reported data on field of study from the Survey of Earned Doctorates, a census of all individuals receiving a research doctorate from a US university within a given academic year.



As you can see here, in some fields — such as molecular biology and biochemistry — the number of NIH-supported Ph.D. recipients has flattened out. Other fields, such as immunology, have increased steadily. The most striking trend, however, is in the field of neuroscience, where there has been a huge spike within the last decade. This likely comes as no surprise to the over 30,000 expected attendees at the Society for Neuroscience meeting which just wrapped up. Stay tuned next year for the next round of data from those receiving their doctoral degree in the 2012 academic year.

[Share](#)
[Tweet](#)
[Share](#)
[Email](#)
[ShareThis](#)



Dr. Sally Rockey is NIH's Deputy Director for Extramural Research, serving as the principal scientific leader and advisor to the NIH Director on the NIH extramural research program.



#### Blog Policies

#### Learn More

- [NIH Grants Website](#)
- [Office of Extramural Research](#)

#### Posts by Month

#### Archives

#### 2014

- [July 2014](#)
- [June 2014](#)
- [May 2014](#)
- [April 2014](#)
- [March 2014](#)
- [February 2014](#)
- [January 2014](#)

#### 2013

#### 2012

#### 2011

## Catalog Copy

### Neuroscience, M.S.

#### I. Contact Information

Michael Webster, Professor of Psychology; Director, Neuroscience Graduate Program  
Psychology/ Mail Stop 296  
(775) 682-8691  
mwebster@unr.edu

#### II. Brief Introduction

Neuroscience is an interdisciplinary program, drawing on faculty and courses from many campus units, including the Colleges of Liberal Arts, Science, and Engineering, and the School of Medicine. Study programs lead to the Master of Science and the Doctor of Philosophy degree. The MS program provides training in the core foundations of neuroscience, ranging from cellular mechanisms to cognition and behavior. Graduate assistantships for the program are available on a competitive basis. Contact the program office for more information.

#### III. Program Objectives/ Student Learning Outcomes

The program is designed to provide training in fundamental concepts and methods in modern neuroscience, and emphasize interdisciplinary and integrative approaches which are seen as central to major advances in the field. The program also emphasizes the development of research skills that will position students to be competitive in academic and research-oriented careers. Student learning outcomes include 1) comprehensive understanding and ability to critically evaluate current knowledge and theories in neuroscience; 2) research skills to effectively identify, design and carry out independent research; and 3) professional development including communication and teaching, grant-writing, and ethics.

#### IV. Admissions Requirements

Applicants to the Neuroscience program must meet all requirements of the Graduate School, including the GPA, GRE, and TOEFL entrance requirements of the Graduate School. Course preparation for the program will be determined on an individual basis. However, all students will be expected to have a basic background in science including a minimum of 3 semester credits each in Calculus, Physics, Chemistry, and Biology. Students lacking this background may be admitted with the provision that appropriate remedial coursework is completed.

#### V. Program Requirements

##### A. Neuroscience Core Courses (13 units)

BIOL 675 - Neurobiology (3 units)

PSY 721 - Advanced Psychophysiology (3 units)

BIO/PSY/SOM - Journal club/ research presentations (1 unit)

BIO/PSY 797 - Thesis research (6 units)

##### B. Additional Course Requirements (8 units)

PSY 706 (or equivalent) - Statistics (3 units)

PSY/CS/BCH - Computing or bioinformatics options (3 units)

PHAR 725 - Ethics and scientific research (2 units)

##### C. Electives (9 units)

Cognitive Neuroscience (PSY)  
PSY 627 - Computer applications (3 units)  
PSY 709 - Comparative sensory neuroscience (3 units)  
PSY 720 - Perception (3 units)  
PSY 729 - Memory (3 units)  
PSY 755 - Individual reading (multiple units)  
PSY 761-3 - Special topics (multiple units)

Cellular and Molecular Neuroscience (BIO-CMB)  
CMB 710 - Molecular cell biology (4 units)  
BCH 704 - Molecular genetics (3 units)  
BCH 706 - Functional genomics (3 units)  
BCH 709 - Introduction to bioinformatics (3 units)  
BIOL 677 - Genes, Brain and Behavior (3 units)  
BIOL 681 - Principles of animal behavior (3 units)  
BIOL 654 - Genomic conflict, epigenetics (3 units)  
BIOL 666 - Developmental biology (3 units)  
BIOL 691 - Independent Study (3 units)  
BIOL 705 - Current topics in cellular and molecular biology (multiple units)  
BIOL 711 - Advanced cellular biology (3 units)  
PHAR 710 - Molecular Pharmacology (3 units)

#### D. Additional Program Requirements

Students in the Neuroscience MS program will complete 2 semesters of thesis research during their second year. In the first year, they have the option of earning elective credits for additional research in their first year, or substituting these credits with elective courses.

Before the third semester in the program, each student must select a research/thesis advisor in consultation with the program director and the desired faculty member, who must be an affiliate member of the program. The advisor will serve as chair of the student's advisory/examination committee.

Academic requirements as determined by the Graduate School and the Program must be met by all program students. Required and elective courses must be chosen from the program curriculum outlined above, and the plan of study requires approval of the student's advisor/examination committee and the program director.

MS students must complete a thesis based on an independent research project. The thesis must be defended orally before their examining committee.

#### VI. Total Units

30 units

#### VII. Undergraduate Prerequisites

Students will be expected to have a basic background in science including a minimum of 3 semester credits each in Calculus, Physics, Chemistry, and Biology. Students lacking this background may be admitted with the provision that appropriate remedial coursework is completed during the first year of graduate study.



## Catalog Copy

Neuroscience, Ph.D.

### I. Contact Information

Michael Webster, Professor of Psychology; Director, Neuroscience Graduate Program  
Psychology/ Mail Stop 296  
(775) 682-8691  
mwebster@unr.edu

### II. Brief Introduction

Neuroscience is an interdisciplinary program, drawing on faculty and courses from many campus units, including the Colleges of Liberal Arts, Science, and Engineering, and the School of Medicine. Study programs lead to the Master of Science and the Doctor of Philosophy degree. The Ph.D. program provides training in the core foundations of neuroscience, ranging from cellular mechanisms to cognition and behavior, with a wide range of options for advanced training and specialization within specific subdisciplines. Graduate assistantships for the program are available on a competitive basis. Contact the program office for more information.

### III. Program Objectives/ Student Learning Outcomes

The program is designed to provide training in fundamental concepts and methods in modern neuroscience, and emphasize interdisciplinary and integrative approaches which are seen as central to major advances in the field. The program also emphasizes the development of research skills that will position students to be competitive in academic and research-oriented careers. Student learning outcomes include 1) comprehensive understanding and ability to critically evaluate current knowledge and theories in neuroscience; 2) research skills to effectively identify, design and carry out independent research; and 3) professional development including communication and teaching, grant-writing, and ethics.

### IV. Admissions Requirements

Applicants to the Neuroscience program must meet all requirements of the Graduate School, including the GPA, GRE, and TOEFL entrance requirements of the Graduate School. Course preparation for the program will be determined on an individual basis. However, all students will be expected to have a basic background in science including a minimum of 3 semester credits each in Calculus, Physics, Chemistry, and Biology. Students lacking this background may be admitted with the provision that appropriate remedial coursework is completed.

### V. Program Requirements

#### A. Neuroscience Core Courses (43 units)

BIOL 675 - Neurobiology (3 units)  
PSY 721 - Advanced Psychophysiology (3 units)  
BIO/PSY/SOM - Journal club/ research presentations (1 unit)  
BIO/PSY/SOM - First year project (6 units)  
BIO/PSY/SOM - Second year research (6 units)  
BIO/PSY 799 - Dissertation research (24 units)

#### B. Additional Course Requirements (8 units)

PSY 706 (or equivalent) - Statistics (3 units)

PSY/CS/BCH - Computing or bioinformatics options (3 units)  
PHAR 725 - Ethics and scientific research (2 units)

#### C. Electives (21 units)

Cognitive Neuroscience (PSY)  
PSY 627 - Computer applications (3 units)  
PSY 709 - Comparative sensory neuroscience (3 units)  
PSY 720 - Perception (3 units)  
PSY 729 - Memory (3 units)  
PSY 755 - Individual reading (multiple units)  
PSY 761-3 - Special topics (multiple units)

#### Cellular and Molecular Neuroscience (BIO-CMB)

CMB 710 - Molecular cell biology (4 units)  
BCH 704 - Molecular genetics (3 units)  
BCH 706 - Functional genomics (3 units)  
BCH 709 - Introduction to bioinformatics (3 units)  
BIOL 677 - Genes, Brain and Behavior (3 units)  
BIOL 681 - Principles of animal behavior (3 units)  
BIOL 654 - Genomic conflict, epigenetics (3 units)  
BIOL 666 - Developmental biology (3 units)  
BIOL 691 - Independent Study (3 units)  
BIOL 705 - Current topics in cellular and molecular biology (multiple units)  
BIOL 711 - Advanced cellular biology (3 units)  
PHAR 710 - Molecular Pharmacology (3 units)

#### D. Additional Program Requirements

Doctoral students in the Neuroscience program will complete 2 semesters of research in their first year. This is designed to expose students to research methods and questions in the discipline and to aid them in selecting an advisor. Before the third semester in the program, each student must select a research/thesis advisor in consultation with the program director and the desired faculty member, who must be an affiliate member of the program. The advisor will serve as chair of the student's advisory/examination committee.

Academic requirements as determined by the Graduate School and the Program must be met by all program students. Required and elective courses must be chosen from the program curriculum outlined above, and the plan of study requires approval of the student's advisor/examination committee and the program director.

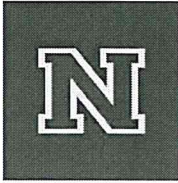
Doctoral students must pass a comprehensive examination before the end of year 2 in which the student independently proposes a research project in the form of a written research grant proposal. Following acceptance of the written proposal by an examining committee, the proposal must be defended orally before the committee. All doctoral degree candidates must present a public seminar of their thesis research and pass an oral defense of the dissertation.

#### VI. Total Units

72 units

## VII. Undergraduate Prerequisites

Students will be expected to have a basic background in science including a minimum of 3 semester credits each in Calculus, Physics, Chemistry, and Biology. Students lacking this background may be admitted with the provision that appropriate remedial coursework is completed during the first year of graduate study.



College of Science  
University of Nevada, Reno

Department of Biology  
University of Nevada  
Reno, NV 89557

9 September 2014

Dr. Michael Webster  
Dept. of Psychology  
University of Nevada  
Reno, NV 89557

Re: Strong support for neuroscience graduate program

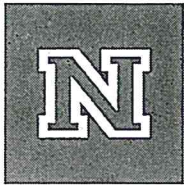
Dear Mike,

I am writing to express my very strong support for the proposed neuroscience graduate program. The relatively new undergraduate major has been a huge success, and it has also been a great example of a collaborative effort across departments and college. As you know there is excellent group of faculty within the biology department whose primary focus is neuroscience. Those faculty and the department in general are committed to help ensure the success of the new graduate program. I expect that the demand for this program will be quite high so the program as has been the case for the undergraduate major. Given the huge importance of neuroscience to both the academic and biomedical communities and the firm foundation that has been laid for the program, now is an excellent time to start this new graduate program.

On behalf of the biology department, I offer the department's very strong support for the proposed graduate program in neuroscience.

Sincerely,

Jack Hayes  
Professor and Chair  
[jhayes@unr.edu](mailto:jhayes@unr.edu)  
775-784-6076



College of Science  
University of Nevada, Reno

Jeffrey S. Thompson Ph.D.  
Dean

September 10, 2014

Professor Michael Webster  
Cognitive and Brain Sciences Program  
Psychology Department  
University of Nevada, Reno

RE: Academic Program Proposal for a Master of Science and Doctor of Philosophy  
program in Neuroscience

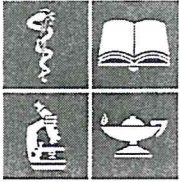
Dear Professor Webster,

I am writing to express my enthusiastic support for the Academic Program Proposal for a Master of Science and Doctor of Philosophy program in Neuroscience. The Psychology and Biology Departments have already cooperatively created a very successful undergraduate degree program in Neuroscience. The extremely successful undergraduate neuroscience program demonstrates the student demand for the discipline and the interest and effort of the Psychology and Biology faculty members to work together to create an interdisciplinary degree program. The discipline of neuroscience has exploded as new techniques and theories are explored and developed, which has led to advances in medicine and the understanding of function and dysfunction of the brain and neural systems. Faculty members from both departments have excellent research resources and knowledge to support the education and training of graduate students in the field of neuroscience. I am confident the proposed program will attract and graduate excellent students in this innovative field of study. I wholeheartedly endorse the Academic Program Proposal for an interdisciplinary MS/PhD program in Neuroscience at the University of Nevada, Reno and I recommend the proposal be approved.

Sincerely,

Jeffrey S. Thompson, Dean  
College of Science

University of Nevada, Reno/0424  
Reno, Nevada 89557-0424  
(775) 784-4591 office  
(775) 784-4592 fax  
<http://www.unr.edu/science>



University of Nevada  
School of Medicine

Thomas L. Schwenk, M.D.  
Professor of Family Medicine  
Dean, School of Medicine  
Vice President, Division of Health Sciences

September 10, 2014

Courses and Curriculum Committee  
University of Nevada, Reno  
Reno, NV 89557-0120

To: Courses and Curriculum Committee

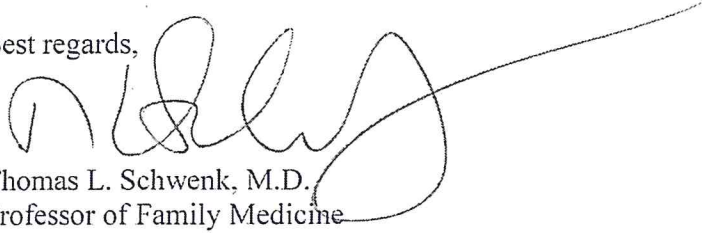
RE: Interdisciplinary Doctoral Training Program in Neuroscience

I am pleased to provide the strongest possible support for the proposal to establish an interdisciplinary doctoral training program in Neuroscience at the University of Nevada, Reno (UNR) in collaboration with the University of Nevada School of Medicine (UNSOM). Neuroscience is a focus of significant research in both UNSOM and UNR, and a focus of clinical and training interest in UNSOM. It is one of four major themes that UNSOM is pursuing in building a translational research program in collaboration with both the basic and clinical sciences. The proposed graduate program will help bridge multiple departments with strengths in different aspects of neural function, and will include a number of exceptional faculty members in both institutions. The proposed training program will contribute substantially to the teaching and research missions of both institutions, and UNSOM is very excited to be a partner in this proposal.

This proposal is particularly timely because of our recent announcement of a major partnership with Renown Health, the largest health care system in Northern Nevada. Renown Health's Institute of Neurosciences includes 6 highly-experienced academic neurologists, a large portfolio of clinical research, expanding medical student teaching programs, and a commitment to develop a neurology residency program. The Institute will be incorporated in toto as a new Department of Neurology at UNSOM. This development will provide substantial opportunities for new teaching and research collaborations.

I look forward to hopefully hearing good news about your proposal.

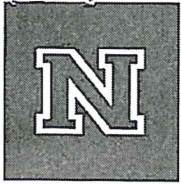
Best regards,

  
Thomas L. Schwenk, M.D.  
Professor of Family Medicine  
Dean, School of Medicine  
Vice President for Health Sciences

Office of the Dean  
University of Nevada, Reno/332  
Reno, Nevada 89557-0332  
(775) 794-6001

[www.medicine.nevada.edu](http://www.medicine.nevada.edu)

Office of the Dean  
2040 West Charleston Blvd., Ste. 400  
Las Vegas, Nevada 89102  
(702) 671-2250



College of Liberal Arts  
University of Nevada, Reno

TO: Michael Webster  
Dean Hardy

FR: Victoria Follette  
Foundation Professor  
Chair

DT: September 17, 2014

I am pleased to offer my support as the Chair of the Department of Psychology for the interdisciplinary MS/PhD program in Integrative Neuroscience. The department's recent successful implementation of the COBRE grant to develop a Center for Neuroscience at UNR has provided a strong foundation for this new degree proposal. As you know, a long term vision of mine has been to develop our research strengths in Cognitive Neuroscience, an area that has become central to the field of Psychology. Our active efforts to grow in this direction included developing a new BS degree program in Neuroscience that is jointly administered with the Biology Department, and recent and current faculty searches that have specifically targeted Cognitive Neuroscience.

Recently the undergraduate neuroscience was evaluated by an expert in the field from the University of Cincinnati. Dr. Vilinsky stated that:

Neuroscience is one of the fastest growing areas of scientific research, with enormous potential for future application in medicine, industry, and business. Directly and indirectly it touches on fields as diverse as computer science, biochemistry, genetics, philosophy, and economics (and of course biology and psychology).

UNR is very well positioned to take the next step in developing a graduate program in Neuroscience which I believe to be an essential component of graduate degree programs in institutions that are either rated at the peer or aspirational level. We have expert faculty, a strong undergraduate curriculum and the COBRE grant that provide that foundation.

The psychology department discussed the proposal in a recent meeting and faculty were supportive of Dr. Webster's proposal of the degree. There was some discussion of concerns and thus there was a secret ballot of the faculty that included the statement the department would not provide resources for the program. The faculty vote was in support of the request for a new degree program. However, several faculty came to me and indicated that they felt that it was essential that I specify that **no** department resources could go to support the program.

Department of Psychology/296  
University of Nevada, Reno  
Reno, Nevada 89557-0296  
(775) 784-6828 office  
(775) 784-1126 fax  
[www.unr.edu/cla/psych](http://www.unr.edu/cla/psych)

The department has been fortunate to hire new CBS faculty and to be a part of the COBRE grant. However, all of this has required a great deal of space and we have no additional space to house any needs of the program, including even administrative staff. Our graduate and undergraduate teaching needs are very demanding and we do not have enough faculty or TAs to accommodate the student demand. It is my understanding that there will be no new courses taught by our faculty that are not already a part of the CBS curriculum. There may be additional need for resources that are not anticipated at this time however we want to be clear that any resource need would not be considered without department discussion. Moreover, and maybe most importantly, the department does not want to have resources given to the degree that are subtly or indirectly considered as resources to the psychology department. Faculty and teaching assistant lines are a special area of concern in that the department as a whole has needs that are relevant to our strategic plan and growth in all areas.

In closing, on behalf of the department I can say that I am very enthusiastic about this degree and wish you success in this process.





NOV 6 2014

**Heather K. Hardy**  
Dean


**Jane Detweiler**  
Associate Dean

**Darrell B. Lockhart**  
Associate Dean

MEMORANDUM

DATE: 5 November 2014

TO: Kevin Carman  
Provost

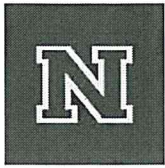
FROM: Heather K. Hardy   
Dean of the College of Liberal Arts

SUBJECT: Proposed interdisciplinary master's and doctoral degrees in neuroscience

In keeping with Interim Dean Casper's January 2012 letter of support and the 2012 CLA Strategic Plan, the College of Liberal Arts continues to endorse the proposal to establish an interdisciplinary graduate program in neuroscience. Five years ago the College of Liberal Arts' Department of Psychology forged a partnership with biology in the College of Science to deliver what has become a highly successful interdisciplinary undergraduate degree in neuroscience. The proposed graduate program is a logical extension of this partnership. The development of such a program is quite strategic, given the global prominence of neuroscience research and its funding potential. The Cognitive and Brain Science group in the psychology department has grown substantially in the past five years and has been highly successful in attracting research funding. It is my understanding that the proposed graduate programs can be mounted with the existing faculty members in the participating departments. An interdisciplinary degree program will provide additional opportunities for collaboration to build on research and instructional strengths in neuroscience across a number of units on campus.

The Department of Psychology enthusiastically supports the proposal, as their faculty in Cognitive Brain Sciences are already heavily invested in the undergraduate neuroscience major. However, they wish to stipulate that the department cannot devote department resources to an interdisciplinary graduate program (beyond the current course offerings). That is, specifically, the department currently has no available space. The proposal indicates that the space allocated currently to the COBRE grant and to CBS faculty will accommodate neuroscience students who will work with them. However, I should note that significant space will be freed up in MSS after the relocations when Thompson opens up. Further, the department indicates they will not reallocate existing TA lines used to recruit psychology doctoral students (already insufficient) to this interdisciplinary program. It is my further understanding that the proposers anticipate supporting the program's graduate students largely on neuroscience grant projects. The department is also requesting that any resources allocated for the new interdisciplinary program not be "counted" as new resources to the Department of Psychology, which has its own needs and priorities.

**Dean's Office**  
University of Nevada, Reno/0086  
Reno, Nevada 89557-0086  
(775) 784-6155 office  
(775) 784-1478 fax  
[www.unr.edu/liberal-arts](http://www.unr.edu/liberal-arts)



College of Engineering  
University of Nevada, Reno

Emmanuel "Manos" Maragakis, Ph. D.  
Dean

Indira Chatterjee, Ph.D.  
Associate Dean

September 29, 2014

To: Courses and Curriculum Committee

Re: Interdisciplinary MS/PhD Program in Neuroscience

The College of Engineering strongly supports the proposal to develop a new graduate program in Neuroscience and Neurobiology for our university. Within the college we have several faculty members with research and teaching interests related to neuroscience and neural information processing. These include faculty in Biomedical Engineering and Computer Science who have already indicated their interest in participating in the program. Graduate training in neuroscience will fill an important educational need in the university, and will provide a rich opportunity to build research and training interactions across many groups on campus. Such a program, if successful, will draw closely existing resources in Neuroscience and provide all involved to pursue major grants and draw PhD candidates. This concept aligns closely with the University's and the College's priority of increasing research and numbers of PhD graduates. Please let me know if I can provide further information.

Sincerely yours,

Manos Maragakis, Ph.D.  
Dean, College of Engineering

Dean's Office  
University of Nevada, Reno/0256  
Reno, Nevada 89557-0250  
(775) 784-6925  
(775) 784-4466 fax  
<http://enr.unr.edu>

Michael A Webster

---

From: Dean J Burkin  
Sent: Wednesday, September 10, 2014 2:39 PM  
To: Michael A Webster  
Cc: Grant S Mastick; Iain Buxton  
Subject: Re: request to include Phar 725 as a course in the proposal for an MS/PhD Neuroscience program at UNR

Hi Michael,

Professor Iain Buxton, our department Chair, has given the OK so you can include the Phar725 course in your curriculum. It would be nice to have some resources for the course if possible including inviting speakers. I'm not sure if this is possible under the neuroscience program

Best wishes,  
Dean

---

Dean J Burkin, PhD  
Professor of Pharmacology  
Director, Cellular and Molecular Pharmacology and Physiology Graduate Program  
Department of Pharmacology/MS573  
Center for Molecular Medicine, Room 303C  
University of Nevada School of Medicine  
Reno, NV 89557  
USA

Tel: [775-784-6288](tel:775-784-6288)  
Fax: [775-784-1620](tel:775-784-1620)

On Sep 10, 2014, at 1:22 PM, "Michael A Webster" <[mwebster@unr.edu](mailto:mwebster@unr.edu)> wrote:

Dear Dr. Burkin,

We are about to submit a proposal for an interdisciplinary MS/PhD program in Neuroscience for UNR, which initially needs to be based entirely on existing courses. As part of the curriculum we would like to require a course on Research Ethics, and Grant suggested your Pharmacology 725 course would be ideal for this. I'm writing to ask if you would allow us to include your course as part of the curriculum. I've attached the proposed curriculum. The program has a lot of support in SOM, and we hope will bridge the research and teaching interests of many faculty and campus units. We also hope to build out the program with additional new courses once it is in place. We expect to initially recruit about 4 students per year, and are hoping that they would be allowed to enroll in your course when it is offered. If you could let me know if this is ok or who else I should contact for this permission I would be very grateful. We are hoping to submit the proposal in the next few days and I am extremely sorry for the short notice. We were only recently told about some of the things we needed to include as part of the proposal and – along with setbacks from a broken leg! – are thus scrambling to get everything together in the hopes of getting the program in place by next fall.

If you have any questions please let me know.

From: Jeffrey Harper  
Sent: Monday, September 15, 2014 8:15 AM  
To: Michael A Webster  
Subject: Re: request to include BCH courses in proposed neuroscience PhD program

Hi Mike

Sure, please include those course options...and any other BCH course that you think might be appropriate.

Jeff

From: Michael A Webster <[mwebster@unr.edu](mailto:mwebster@unr.edu)>  
Date: Saturday, September 13, 2014 at 3:16 PM  
To: Jeff Harper <[jfharper@unr.edu](mailto:jfharper@unr.edu)>  
Cc: Grant SMastick <[gmastick@unr.edu](mailto:gmastick@unr.edu)>  
Subject: request to include BCH courses in proposed neuroscience PhD program

Dear Jeff,

I'm writing because we are submitting a proposal to begin an interdisciplinary MS/PhD program in Neuroscience at UNR. I've attached a copy of the proposed curriculum, which includes a number of elective courses that will allow students to specialize in different areas of the field. Grant Mastick and others in Biology had suggested BCH 704, 706, and 709 as important course options for the curriculum, and we were told that we will need your permission as department chair to include them. Please let me know whether it is ok to make these courses available to students in the proposed neuroscience program as electives.

Many thanks and best regards, Mike

Michael A. Webster, Foundation Professor  
Director, Center for Integrative Neuroscience (NIH NIGMS COBRE)  
Co-Director, Neuroscience BS Degree  
Department of Psychology / 296, University of Nevada, Reno  
Reno NV 89557 USA [mwebster@unr.edu](mailto:mwebster@unr.edu)  
775-682-8691 (office) 775-682-8669 (lab) 775-784-1126 (fax)  
lab: <http://wolfweb.unr.edu/~mwebster> COBRE: <http://www.unr.edu/neuroscience>

## New Program Pre-proposal Committee New Program Proposal Summary

Date: February 23, 2012

Department: Psychology, Biology, Physiology and Cell Biology, Biomedical Engineering, Pharmacology, Microbiology and Immunology, Computer Science, Philosophy, Agriculture Nutrition and Veterinary Science

Proposed Program: Interdisciplinary Graduate Program in Neuroscience and Neurobiology

Brief description of program:

This proposal is to develop a new interdisciplinary MA/PhD program in Neuroscience and Neurobiology for the UNR campus. The degree would be designed to provide a strong foundation and integration of key substantive areas in brain sciences, from cellular mechanisms to cognition and behavior, while also allowing students to focus advanced training in specific subdisciplines. The program would draw on faculty and courses spanning multiple departments and colleges, a model that is widely used for Neuroscience graduate programs at other universities in the US. Students would initially complete a subset of foundation courses including Cellular Neuroscience, Systems Neuroscience, Cognitive Neuroscience, Neurobiology and Behavior, and Computational Neuroscience and Neural Networks. Additional required courses would include Statistics, a Neuroscience Journal Club and Colloquium Series, and supervised research. This core could be complemented by a variety of elective courses tailored to the student's area of specialization. Most of the courses required for the degree are already available and regularly offered through participating departments. The training would prepare students for research careers in a variety of fields in academics, industry, and health sciences.

Demonstrated need for program (academic, state, regional, national):

The field of Neuroscience is a highly active and important area of basic and clinical research, as evidenced by the many recent Nobel Laureates in Neuroscience, and by both the "Decade of the Brain" and "Blueprint for Neuroscience Research" funding focus of the NIH. The Society for Neuroscience (SfN) has over 40,000 members. While relatively uncommon 40 years ago, almost all major universities and states now have graduate programs in Neuroscience, with many offering multiple programs in the field. The lack of a graduate program in Neuroscience at UNR thus represents a glaring gap in our curriculum. SfN conducts biannual surveys of Neuroscience graduate programs: [http://www.sfn.org/index.aspx?pagename=professionalDevelopment\\_ndpsurvey](http://www.sfn.org/index.aspx?pagename=professionalDevelopment_ndpsurvey).

The most recent (2009) sampled 134 SfN institution member programs, and showed that program growth and demand for the field remains very high, and that the programs recruit a very strong and diverse pool of applicants.

Describe how this program addresses needs identified in the university, college, and/or department strategic plans.

Developing strength in Neuroscience is already central to the strategic plans of many colleges and departments (please see attached letters of support). Psychology has a graduate program in Cognitive Neuroscience and has targeted several recent hires in this area. Biology has made several recent hires to build research strength in Developmental Neurobiology and the Neurobiology of Behavior. The School of Medicine has maintained a strong research emphasis in Cellular Neuroscience. The Biomedical Engineering program has targeted imaging and biosensing (including neural tissues) as a strategic area of growth, while Computer Science has built substantial strength in artificial intelligence and robotics. Faculty-initiated efforts to build Neuroscience have included establishing a chapter of SfN, ongoing journal clubs, and a current NIH COBRE proposal to establish a Center for Integrative Neuroscience. In 2008 the Psychology and Biology Departments also teamed to offer a new undergraduate degree in Neuroscience. The degree has been extremely popular, growing to roughly 170 majors in its first three years, and has attracted strong interest within the honors program and among premedical students. We similarly anticipate strong demand at the graduate level.

Describe any resources needed to implement this program, including personnel, library holdings, facilities, or equipment.

We have already identified 30 faculty members from multiple departments with potential interest in participating in the program (see attached list). Most required foundation and methods courses are already available as existing graduate courses. Research Assistantships will be important for recruiting and supporting students, though we recognize current budget limitations and will initially support students through faculty grants.

Source of funds for these resources:

As noted above the program could initially be implemented with existing resources.

Date Reviewed by New Program Pre-proposal Committee: \_\_\_\_\_

(Please try to limit your proposal to two pages.)

Interdisciplinary Graduate Program in Neuroscience and Neurobiology  
Faculty Participants

The following faculty members conduct research and teach in Neuroscience-related fields and have indicated their interest in participating in the program. This list is based on a preliminary survey and we anticipate that the program will attract a number of additional members.

Psychology (CLA):

Michael Webster  
Michael Crognale  
Jeff Hutsler  
Marian Berryhill  
Gideon Caplovitz  
Linda Hayes

Philosophy (CLA):

Thomas Nickles

Biology (COS):

Grant Mastick  
Thomas Kidd  
Scott Clark  
Alexander van der Linden  
Alexander Keene  
Vladimir Pravosudov  
Guy Hoelzer  
Matthew Forister

Physiology and Cell Biology (SOM):

Kenton Sanders  
James Kenyon  
Christopher von Bartheld  
Qi Wan  
Terence Smith

Pharmacology (SOM)

David Westfall (emeritus)

Microbiology and Immunology

Ken Hunter

Electrical and Biomedical Engineering (COEN):

Nelson Publicover  
Yantao Shen  
Xiaoshan Zhu

Computer Science (COEN):

George Bebis  
Mircea Nicolescu  
Monica Nicolescu  
Fred Harris

Agriculture, Nutrition, and Veterinary Science (CABNR)

Stan Omaye



College of Liberal Arts  
University of Nevada, Reno

**Scott E. Casper**  
Interim Dean

**Kathleen Boardman**  
Associate Dean

DATE: 12 January 2012

TO: Pre-Proposal Review Committee

FROM: Scott E. Casper, Interim Dean *Scott Casper*  
College of Liberal Arts

RE: Neuroscience Pre-proposal

The College of Liberal Arts fully endorses the pre-proposal to establish an interdisciplinary graduate program in Neuroscience and Neurobiology for our university. Three years ago we teamed with the College of Science to offer a new undergraduate degree in Neuroscience. This degree program has been very successful in attracting a large pool of talented students, and has demonstrated the need and demand for the field. The current pre-proposal to develop masters and doctoral programs in Neuroscience is a logical extension of this major and will fill an important gap in the educational and research opportunities we provide. The program also fits with the strategic plan of many units on campus to build our research strengths in the Neurosciences. In the College of Liberal Arts this has included recent faculty hires targeted in Cognitive Neuroscience within the Department of Psychology. As documented in the pre-proposal, these faculty members are part of a large group on campus with research and teaching interests in the Neurosciences, and the graduate program will facilitate their interaction and student recruitment. We welcome the prospect of partnering with other colleges to offer this new training opportunity for our students.

**Dean's Office**  
University of Nevada, Reno/086  
Reno, Nevada 89557-0086  
(775) 784-6155 office  
(775) 784-1478 fax





College of Science  
University of Nevada, Reno

Jeffrey S. Thompson Ph.D.  
Dean

DATE: February 15, 2012

TO: Pre-Proposal Review Committee

FROM: Jeffrey S. Thompson  
Dean, College of Science

RE: Neuroscience Pre-Proposal

The College of Science enthusiastically endorses the pre-proposal to build a graduate program in Neuroscience and Neurobiology for our university. The undergraduate degree in neuroscience that we helped to establish 3 years ago has grown rapidly and far beyond expectations, and demonstrates the strong student interest and demand for training in the discipline. This demand also clearly exists at the graduate level, and the program will thus fill an important gap in our teaching mission. Neuroscience is also an area of strategic growth within the college, where we have recruited a number of exceptional faculty members with research interests in neurobiology. These are part of a large group of neuroscience researchers spread across many academic units on campus. The proposed interdisciplinary training program will greatly enhance interactions between them for both instruction and research, and will facilitate graduate student recruitment. This is a much needed program and has the full support of the College of Science.

University of Nevada, Reno/0424  
Reno, Nevada 89557-0424  
(775) 784-4591 office  
(775) 784-4592 fax  
<http://www.unr.edu/cos/>



**College of Engineering**  
University of Nevada, Reno

**Emmanuel "Manos" Maragakis, Ph. D.**  
Dean

**Indira Chatterjee, Ph.D.**  
Associate Dean

Pre-proposal Review Committee

15 February 2012

RE: Neuroscience Pre-proposal

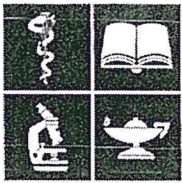
Dear Review Committee,

The College of Engineering strongly supports the pre-proposal to develop a new graduate program in Neuroscience and Neurobiology for our university. Within the college we have many faculty with research and teaching interests related to neuroscience and neural information processing. These include faculty in Biomedical Engineering and Computer Science who have already indicated their interest in participating in the program. Graduate training in neuroscience will fill an important educational need in the university, and will provide a rich opportunity to build research and training interactions across many groups on campus. The pre-proposal has the college's full support.

Sincerely,

Manos Maragakis, Ph.D.  
Dean

**Dean's Office**  
University of Nevada, Reno 0256  
Reno, Nevada 89557-0250  
(775) 784-6925  
(775) 784-4466 fax  
<http://cengr.unr.edu>



University of Nevada  
School of Medicine


Thomas L. Schwenk, M.D.  
Vice President, Division of Health Sciences  
Dean, School of Medicine

## MEMORANDUM

Date: February 13, 2012

To: Pre-Proposal Committee

Through: Michael Webster, Ph.D.  
Professor, Department of Psychology

From: Thomas L. Schwenk, M.D.   
Dean, University of Nevada School of Medicine and  
Vice President, Division of Health Sciences

RE: Interdisciplinary Doctoral Training Program in Neuroscience and Neurobiology

---

I am pleased to provide the strongest possible support for the intended proposal to establish an interdisciplinary doctoral training program in Neuroscience and Neurobiology at the University of Nevada, Reno (UNR), in collaboration with the University of Nevada, School of Medicine (UNSOM). Neuroscience is a focus of significant research in both UNSOM and UNR, and a focus of clinical and training interest in UNSOM. It is one of four major themes that UNSOM will be pursuing in building a translational research program in collaboration with both the basic and clinical sciences. The proposed graduate program will bridge multiple departments across both UNSOM and UNR with strengths in several aspects of neural function, and will include a number of exceptional faculty members in both institutions. It fits well with some clinical and translational research ventures in a preliminary stage of development that could be highly synergistic. The proposed training program will contribute substantially to the teaching and research missions of both institutions, and UNSOM would be very excited to be a partner in this proposal.

Office of the Vice President & Dean  
Pennington Medical Education Bldg.  
University of Nevada, Reno/332  
Reno, Nevada 89557-0332  
(775) 784-6001 office  
(775) 784-3251 fax