

MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Katie Algeo
Dr. Melanie Autin
Dr. Doug Harper
Dr. Phil Lienesch
Dr. Jeremy Maddox

Dr. Andy Mienaltowski
Dr. Les Pesterfield
Dr. Huanjing Wang
Dr. Todd Willian

FROM: Kenneth Crawford, Chair

SUBJECT: Agenda for Thursday, April 5, 2018 4:00 p.m. in COHH 4123

A. OLD BUSINESS:

- I. Consideration of the minutes of the February 1, 2018 meeting.

B. NEW BUSINESS:

Type of item	Description of Item & Contact Information
Information	Proposal to Create a Temporary Course PSYS 175, PSYS University Experience, 1 hr. Contact: Kelly Madole, Kelly.madole@wku.edu , 56475
Consent	Proposal to Revise Course Catalog Listing CHEM 109, Chemistry for the health Sciences, 3 hrs. Contact: Jeremy Maddox, Jeremy.maddox@wku.edu , x58725
Consent	Proposal to Delete a Course PHYS 140, Foundations of Physics, 3 hrs. Contact: Doug Harper, doug.harper@wku.edu , x6194
Consent	Proposal to Delete a Course PHYS 175, University Experience for Physics Majors, 2 hrs. Contact: Doug Harper, doug.harper@wku.edu , x6194
Consent	Proposal to Delete a Course PHYS 270, University Physics III, 3 hrs. Contact: Doug Harper, doug.harper@wku.edu , x6194
Consent	Proposal to Delete a Course PHYS 271, Lab for University Physics III, 1 hrs. Contact: Doug Harper, doug.harper@wku.edu , x6194
Consent	Proposal to Delete a Course PHYS 320, Introductory Modern Physics I, 3 hrs. Contact: Doug Harper, doug.harper@wku.edu , x6194
Consent	Proposal to Revise Course Prerequisites/Corequisites PHYS 316, Computational Physics, 3 hrs. Contact: Doug Harper, doug.harper@wku.edu , x6194
Consent	Proposal to Revise Course Prerequisites/Corequisites PHYS 425, Physics of Materials Science, 3 hrs. Contact: Doug Harper, doug.harper@wku.edu , x6194
Action	Proposal to Revise Course Credit Hours

	CHEM 299, Intro to Chemical Research, 0-3 hrs. Contact: Jeremy Maddox, Jeremy.maddox@wku.edu , x58725
Action	Proposal to Revise Course Credit Hours CHEM 399, Research Problems in Chemistry, 0-3 hrs. Contact: Jeremy Maddox, Jeremy.maddox@wku.edu , x58725
Action	Proposal to Revise Course Credit Hours GEOL 420, Geomorphology, 4 hrs. Contact: Fred Siewers, fred.siewers@wku.edu , x55988
Action	Proposal to Revise Course Credit Hours GEOG 420, Geomorphology, 4 hrs. Contact: Fred Siewers, fred.siewers@wku.edu , x55988
Action	Proposal to Make Multiple Revisions to a Course PHYS 321, Introductory Modern Physics II, 3 hrs. Contact: Michael Carini, mike.carini@wku.edu , x54357
Action	Proposal to Create a New Course PSYS 161, Intro Biopsychology lab, 1 hour. Contact Gordon Baylis, gordon.baylis@wku.edu , x53919

C. OTHER BUSINESS

Members Present:

Dr. Melanie Autin

Dr. Dough Harper

Dr. Jeremy Maddox

Dr. Andy Mienaltowski

Dr. Les Pesterfield

Dr. Huanjing Wang

Dr. Todd Willian

FROM: Ken Crawford, Chair

The meeting was called to order at 4:00pm.

OLD BUSINESS:

Mienaltowski/Willian moved to approve of the minutes of the November 30, 2017 meeting. Motion passed.

NEW BUSINESS:

Consent Agenda

Mienaltowski/Wang moved to approve the consent agenda. Motion passed.

Action Agenda

Department of Mathematics

Mienaltowski/Autin moved to bundle and approve the Proposal to Revise a Program: Ref. 528 and 728, Major in Mathematics. Motion passed with friendly amendment.

Department of Psychological Sciences

Autin/Maddox moved to approve the Proposal to Create a New Course: PSYS 300. Motion passed.

Maddox/Willian moved to approve the Proposal to Revise a Program: Ref. 747, Major in Psychological Sciences. Motion passed.

School of Engineering & Applied Sciences

Wang/Mienaltowski moved to approve the Proposal to Make Multiple Revisions to a Course: AMS 394, Lean Systems. Motion passed with friendly amendment.

Wang/Autin moved to approve the Proposal to Revise a Program: Ref. 343, Minor in Construction Management. Motion passed with friendly amendment.

Autin/Wang moved to approve the Proposal to Revise a Program: Ref. 575, Technology Management. Motion passed.

Autin/Wang moved to approve the Proposal to Revise a Program: Ref. 5006, Manufacturing Engineering Technology. Motion passed.

Willian/Mienaltowski moved to approve the Proposal to Revise a Program: Ref. 629P/629, Major in Computer Science. Motion passed.

OTHER BUSINESS:

Adjourned 4:40pm

Proposal Date: March 12, 2018

**Ogden College of Science and Engineering
Department of Psychological Sciences
Proposal to Create a Temporary Course
(Information Item)**

Contact Person: Dr. Kelly Madole, kelly.madole@wku.edu, 5-6475

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: PSYS 175
- 1.2 Course title: University Experience
- 1.3 Abbreviated course title: PSYS UNIV EXPERIENCE
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 1
- 1.5 Schedule type: S
- 1.6 Prerequisites/corequisites: For beginning college freshmen or transfer students with fewer than 36 semester hours of credit.
- 1.7 Grade type: X standard letter grade ___ pass/fail ___ in progress (IP)
- 1.8 Course description: Transition to university experience for Psychological Science majors. Topics include learning skills, campus resources, research tools, exploration of majors, specializations within the discipline, career trends, and professional development.

2. Rationale

- 2.1 Reason for offering this course on a temporary basis: Courses like UC 175 provide academic programs with an opportunity to impart useful information to undergraduates that can benefit students as they transition to university experiences, including choosing academic tracks, considering future career directions, and utilizing campus resources to stay connected to the academic program.
- 2.2 Relationship of the proposed course to courses offered in other academic units: Many departments/academic programs offer courses comparable to UC 175 University Experience. The proposed PSYS 175 will be for psychological science students and focused on information that is directly relevant to their engagement at WKU as a psychological science student.

3. Description of proposed course

3.1 Course content outline

The proposed course will be offered in seminar format; students will attend for one hour per week and learn about a variety of topics that are relevant to their orientation to the university as a psychological science student. Topics to be discussed include, but are not limited to:

- Professional training tracks within the psychological sciences
- Development of a personal plan for academic success
- Utilization of campus information technology
- Navigation of campus resources, from library to student organizations
- Financial considerations within discipline-specific training
- Student engagement through internships and research
- Identity development and maintenance as a professional in the psychological sciences

- Orientation to scientific discovery
- The scientist-practitioner model
- Preparation for careers in psychological science

3.2 Tentative text(s)

Kuther, T. L. (2015). *The Psychology Major's Handbook, 4th ed.* Wadsworth.

Dunn, D. S., & Halonen, J. S. (2016). *The Psychology Major's Companion: Everything You Need to Know to Get Where You Want to Go.* Worth.

4. Second offering of a temporary course (if applicable)

4.1 Reason for offering this course a second time on a temporary basis: N/A

4.2 Term course was first offered: N/A

4.3 Enrollment in first offering: N/A

5. Term of Implementation: Fall 2018

6. Dates of review/approvals:

Department of Psychological Sciences

Dean, College of Science and Engineering

Office of the Provost

Kelly Madole
Digitally signed by Kelly Madole
DN: cn=Kelly Madole, o=Western KY University,
ou=Dept. of Psychological Sciences,
email=kelly.madole@uky.edu, c=US
Date: 2018.01.13 14:17:43 -0500

Cheryl Stevens

**Ogden College of Science & Engineering
Department of Chemistry
Proposal to Revise Course Catalog Listing
(Consent Item)**

Contact Person: Jeremy B Maddox, jeremy.maddox@wku.edu

1. Identification of course:

- 1.1 Course prefix (subject area) and number: CHEM 109
- 1.2 Course title: CHEMISTRY FOR THE HEALTH SCIENCES

2. Current course catalog listing:

A course designed to emphasize the practical aspects on inorganic, organic and biochemistry as related to human health. The course is offered specifically for students in the allied health programs, but is also recommended for students in physical education, recreation, health and safety and other disciplines dealing with human health. It does not count toward a major or minor in chemistry, but does satisfy general education requirement. No laboratory accompanies this course, but CHEM 102 is recommended for students desiring laboratory experience. Colonnade E-NS | NS

3. Proposed course catalog listing:

A course designed to emphasize the practical aspects on inorganic, organic and biochemistry as related to human health. The course is offered specifically for students in the allied health programs, but is also recommended for students in physical education, recreation, health and safety and other disciplines dealing with human health. It does not count toward a major or minor in chemistry, but does satisfy general education requirement. Colonnade E-NS | NS

4. Rationale for revision of the course catalog listing:

Reference to CHEM 102 is removed because it is a suspended course.

5. Proposed term for implementation: First available

6. Dates of prior committee approvals:

Department of Chemistry

2/16/2018

Ogden College Curriculum Committee

Professional Education Council (if applicable)

Not applicable

General Education Committee (if applicable)

Undergraduate Curriculum Committee

University Senate

Proposal Date: 02/04/2018

**Ogden College of Science & Engineering
Department of Chemistry
Proposal to Revise Course Credit Hours
(Action Item)**

Contact Person: Jeremy B Maddox, jeremy.maddox@wku.edu, 5-8725

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: CHEM 299
- 1.2 Course title: INTRODUCTION TO CHEMICAL RESEARCH
- 1.3 Credit hours: 1-3

2. Proposed course credit hours: 0-3

3. Rationale for the revision of course credit hours:

The Department and Ogden College will use a zero credit hour section of CHEM 299 to track students participating in research but that are not using that activity for CHEM credit, e.g., research students paid via a grant.

4. Proposed term for implementation: First available

5. Dates of prior committee approvals:

Department of Chemistry

2/16/2018

Ogden College Curriculum Committee

Professional Education Council (if applicable)

Not applicable

General Education Committee (if applicable)

Not applicable

Undergraduate Curriculum Committee

University Senate

Proposal Date: 03-30-2018

**Ogden College of Science & Engineering
Department of Physics & Astronomy
Proposal to Delete a Course
(Consent Item)**

Contact Person: Doug Harper, doug.harper@wku.edu, 270-745-6194

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: PHYS 140
- 1.2 Course title: Foundations of Physics

2. Rationale for the course deletion:

This course was developed many years ago for the purpose of helping to prepare students who were not ready to transition to University Physics. PHYS 140 has not been taught since we created PHYS 180 – Introductory Modern Optics.

3. Effect of course deletion on programs or other departments, if known:

None.

4. Proposed term for implementation:

Fall 2018

5. Dates of prior committee approvals:

Department of Physics and Astronomy
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03-28-2018

Proposal Date: 03-30-2018

**Ogden College of Science & Engineering
Department of Physics & Astronomy
Proposal to Delete a Course
(Consent Item)**

Contact Person: Doug Harper, doug.harper@wku.edu, 270-745-6194

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: PHYS 175
- 1.2 Course title: University Experience for Physics Majors

2. Rationale for the course deletion:

This course was developed many years prior to the days of UC 101. PHYS 175 has not been offered for several years and there are no plans to begin doing so.

3. Effect of course deletion on programs or other departments, if known:

None.

4. Proposed term for implementation:

Fall 2018

5. Dates of prior committee approvals:

Department of Physics and Astronomy
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03-28-2018

**Ogden College of Science & Engineering
Department of Physics & Astronomy
Proposal to Delete a Course
(Consent Item)**

Contact Person: Doug Harper, doug.harper@wku.edu, 270-745-6194

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: PHYS 270
- 1.2 Course title: University Physics III

2. Rationale for the course deletion:

This course used to be the third course in the sequence of University Physics (PHYS 250, PHYS 260, and PHYS 270, each 3 hours). When changed from a three-semester sequence to a two-semester sequence (PHYS 255 and PHYS 265, 4 hours each) we didn't delete PHYS 270 right away because we had to teach it for a few students. It then got overlooked and should have been removed some time ago.

3. Effect of course deletion on programs or other departments, if known:

None.

4. Proposed term for implementation:

Fall 2018

5. Dates of prior committee approvals:

Department of Physics and Astronomy
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03-28-2018

**Ogden College of Science & Engineering
Department of Physics & Astronomy
Proposal to Delete a Course
(Consent Item)**

Contact Person: Doug Harper, doug.harper@wku.edu, 270-745-6194

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: PHYS 271
- 1.2 Course title: Laboratory for University Physics III

2. Rationale for the course deletion:

This was the laboratory course for the third course in the sequence of University Physics (PHYS 250, PHYS 260, and PHYS 270, each 3 hours). When we changed from a three-semester sequence to a two-semester sequence (PHYS 255 and PHYS 265, 4 hours each) we didn't delete PHYS 270 and PHYS 271 right away because we had to offer them for a few students. It then got overlooked and should have been removed some time ago.

3. Effect of course deletion on programs or other departments, if known:

None.

4. Proposed term for implementation:

Fall 2018

5. Dates of prior committee approvals:

Department of Physics and Astronomy
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03-28-2018

**Ogden College of Science & Engineering
Department of Physics & Astronomy
Proposal to Delete a Course
(Consent Item)**

Contact Person: Doug Harper, doug.harper@wku.edu, 270-745-6194

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: PHYS 320
- 1.2 Course title: Introductory Modern Physics I

2. Rationale for the course deletion:

Several years ago we created a new course, PHYS 180 – Introductory Modern Physics, that contained nearly the same content as this course but with lower mathematic requirements. PHYS 180 has been highly successful for us and we have no plans of returning to offer this material at the junior level. We have not offered this course for several years.

3. Effect of course deletion on programs or other departments, if known:

None.

4. Proposed term for implementation:

Fall 2018

5. Dates of prior committee approvals:

Department of Physics and Astronomy
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03-28-2018

Proposal Date: 03-30-2018

**Ogden College of Science & Technology
Department of Physics & Astronomy
Proposal to Revise Course Prerequisites/Corequisites
(Consent Item)**

Contact Person: Doug Harper, doug.harper@wku.edu, 270-745-6194

1. Identification of course:

- 1.1 Course prefix (subject area) and number: PHYS 316
- 1.2 Course title: Computational Physics

2. Current prerequisites/corequisites/special requirements:

PHYS 265 or permission of the instructor.

3. Proposed prerequisites/corequisites/special requirements:

PHYS 321

4. Rationale for the revision of prerequisites/corequisites/special requirements:

PHYS 321 serves as a gateway for many of our upper-level courses in the physic major. Students who have completed PHYS 321 have studied a very rich blend of physical phenomena from fields such as quantum physics, nuclear physics, atomic physics, solid-state physics, and astrophysics that are ideal for modeling applications in this course. A student who has only completed PHYS 265 has only been exposed to classical physics and the number of applications for computer modeling is drastically limited.

5. Effect on completion of major/minor sequence:

None

6. Proposed term for implementation:

Spring 2018

7. Dates of prior committee approvals:

Department of Physics & Astronomy
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03-28-2018

Proposal Date: 02/04/2018

**Ogden College of Science & Engineering
Department of Chemistry
Proposal to Revise Course Credit Hours
(Action Item)**

Contact Person: Jeremy B Maddox, jeremy.maddox@wku.edu, 5-8725

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: CHEM 399
- 1.2 Course title: RESEARH PROBLEMS IN CHEMISTRY
- 1.3 Credit hours: 1-3

2. Proposed course credit hours: 0-3

3. Rationale for the revision of course credit hours:

The Department and Ogden College will use a zero credit hour section of CHEM 399 to track students participating in research but that are not using that activity for CHEM credit, e.g., research students paid via a grant.

4. Proposed term for implementation: First available

5. Dates of prior committee approvals:

Department of Chemistry

2/16/2018

Ogden College Curriculum Committee

Professional Education Council (if applicable)

Not applicable

General Education Committee (if applicable)

Not applicable

Undergraduate Curriculum Committee

University Senate

Proposal Date: February 28, 2018

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise Course Credit Hours
(Action Item)**

Contact Person: Fred Siewers, fred.siewers@wku.edu, 5-5988

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: GEOL 420
- 1.2 Course title: Geomorphology
- 1.3 Credit hours: 4

2. Proposed course credit hours: 3

3. Rationale for the revision of course credit hours: The laboratory/field/hands-on component of this course is now encumbered during the contact time associated with a 3 credit hour course; thus, the extra hour dedicated specifically to these activities is no longer needed to achieve the course learning objectives.

4. Proposed term for implementation: Fall 2018

5. Dates of prior committee approvals:

Geography & Geology Department
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03/02/2018

Proposal Date: February 28, 2018

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise Course Credit Hours
(Action Item)**

Contact Person: Fred Siewers, fred.siewers@wku.edu, 5-5988

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: GEOG 420
- 1.2 Course title: Geomorphology
- 1.3 Credit hours: 4

2. Proposed course credit hours: 3

3. Rationale for the revision of course credit hours: The laboratory/field/hands-on component of this course is now encumbered during the contact time associated with a 3 credit hour course; thus, the extra hour dedicated specifically to these activities is no longer needed to achieve the course learning objectives.

4. Proposed term for implementation: Fall 2018

5. Dates of prior committee approvals:

Geography & Geology Department
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

03/02/2018

Proposal Date: March 29, 2018

Ogden College of Science & Engineering
Department of Physics & Astronomy
Proposal to Make Multiple Revisions to a Course
(Action Item)

Contact Person: Michael Carini, mike.carini@wku.edu, (270)745-4357

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: PHYS 321
- 1.2 Course title: INTRODUCTORY MODERN PHYSICS II

2. Revise course title:

- 2.1 Current course title:
- 2.2 Proposed course title:
- 2.3 Proposed abbreviated title:
- 2.4 Rationale for revision of course title:

3. Revise course number:

- 3.1 Current course number:
- 3.2 Proposed course number:
- 3.3 Rationale for revision of course number:

4. Revise course prerequisites/corequisites/special requirements:

- 4.1 Current prerequisites/corequisites/special requirements: (indicate which)
Prerequisites: CHEM 120/121 and MATH 237
- 4.2 Proposed prerequisites/corequisites/special requirements:
Prerequisites: PHYS 180 and PHYS 265. Pre- or co-requisites: CHEM 120 and MATH 237
- 4.3 Rationale for revision of course prerequisites/corequisites/special requirements:
Formally substantiates need for earlier pertinent PHYS courses, and allows the ancillary courses to be taken either prior to, or concurrently with, the PHYS 321 course.
- 4.4 Effect on completion of major/minor sequence:

None. Students have typically met these requirements in the past; the proposed change merely formalizes them in the Catalog text.

5. Revise course catalog listing:

5.1 Current course catalog listing:

A study of the quantization phenomena describing the many electron atoms; statistical distribution laws, conductivity, superconductivity and band theory of solids; nuclear structure, nuclear reactions and other selected topics of modern physics.

5.2 Proposed course catalog listing:

Study of the breakdown of classical physics at velocities close to the speed of light and on atomic scales. Topics include relativistic kinematics and dynamics, wave/particle duality, the Schrodinger equation, square wells, harmonic oscillators, the hydrogen atom, many-electron atoms, statistical distribution laws, conductivity and superconductivity, the band theory of solids, nuclear structure and reactions, and other selected topics of modern physics

5.3 Rationale for revision of course catalog listing:

To reflect the foundational content that must be covered before proceeding to applications.

6. Revise course credit hours:

6.1 Current course credit hours:

6.2 Proposed course credit hours:

6.3 Rationale for revision of course credit hours:

7. Revise grade type:

7.1 Current grade type:

7.2 Proposed grade type:

7.3 Rationale for revision of grade type:

8. Proposed term for implementation: Fall 2018 (201830)

9. Dates of prior committee approvals:

Department of Physics & Astronomy

Ogden College Curriculum Committee

Professional Education Council (if applicable)

General Education Committee (if applicable)

Undergraduate Curriculum Committee

University Senate

03/28/2018

Ogden College of Science & Technology
Department of Physics & Astronomy
Proposal to Revise Course Prerequisites/Corequisites
(Consent Item)

Contact Person: Sanju Gupta, sanju.gupta@wku.edu, 270-745-5940

1. Identification of course:

- 1.1 Course prefix (subject area) and number: PHYS 425
- 1.2 Course title: Physics of Materials Science

2. Current prerequisites/corequisites/special requirements:

Prerequisites: PHYS321, MATH 237

Corequisites: PHYS440, MATH 331

3. Proposed prerequisites/corequisites/special requirements:

Prerequisites: PHYS321 and MATH 237,

Prerequisite or corequisite: MATH 331

4. Rationale for the revision of prerequisites/corequisites/special requirements:

The PHYS425 course investigates the bonding, structure and processing of solid materials at all length scales that underpins the physical properties and applications. Thus PHYS425 course is an interdisciplinary and applied in nature. In contrast PHYS440 course is designed to understand the classical theory of fundamental fields which are electrical and magnetic in nature and their sources. Therefore the material covered in the PHYS440 is not directly required for PHYS425 course and therefore we propose to delete PHYS440 as a co-requisite.

Students taking PHYS425 require basic understanding of differential equations and it will be sufficient if students are concurrently enrolled in MATH 331 as PHYS425. Therefore, we would like MATH 331 course that deals with differential equations to be listed as a pre-requisite that may be taken concurrently (*i.e.* a Pre-requisite or a Co-requisite).

5. Effect on completion of major/minor sequence:

None

6. Proposed term for implementation:

Spring 2018

7. Dates of prior committee approvals:

Department of Physics & Astronomy

03-28-2018

Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

**Ogden College of Science and Engineering
Department of Psychological Science
Proposal to Create a New Course
(Action Item)**

Contact Person: Gordon C Baylis: gordon.baylis@wku.edu

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: PSYS 161
- 1.2 Course title: Introduction to Biopsychology Laboratory
- 1.3 Abbreviated course title: INTRO BIOPSYCHOLOGY LAB
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 1 Variable credit (yes or no)
- 1.5 Grade type: Standard letter grade
- 1.6 Prerequisites/corequisites: PSYS160 as prerequisite or corequisite.
- 1.7 Course description: A laboratory class that accompanies an introductory class emphasizing the contributions of molecular, cellular, physiological, and evolutionary biology to the scientific understanding of psychological processes. This class provides hands-on experience in a cross section of techniques used in this area of science.

2. Rationale:

- 2.1 Reason for developing the proposed course:

A natural science class such as PSYS160 invites students to want to experience the science hands-on, because any science is based in the scientific method, a method that is best understood by doing. By seeing a variety of techniques that scientists use to measure psychological processes from a biological perspective, students will have a greater understanding of the interactions between the underlying biological components that support psychological principles.

- 2.2 Projected enrollment in the proposed course: 20

A lab class of this type is difficult to teach to more than a moderate number of students. Overall projected enrollment per term is about 20-40 students, with no more than 20 students per section.

- 2.3 Relationship of the proposed course to courses now offered by the department:

This course is designed to be taken as a pre-requisite or co-requisite to PSYS160. Psychological Sciences also offers PSYS 362 Behavioral Neuroscience with Lab, which is a more advanced treatment of neuroscience material and includes lab activities for upper-level students within the major who have a more thorough understanding of research design. The proposed course will not be offered exclusively to Psychological Science majors and is taught at an introductory level appropriate for students with little to no background in psychology and/or biology.

2.4 Relationship of the proposed course to courses offered in other departments:

The proposed course is not offered in other departments. A large number of introductory level classes in the natural and physical sciences have a laboratory that accompanies them, for example:

BIOL 113 course with BIOL 114 lab, BIOL 120 course with BIOL 121 lab, BIOL 122 course with BIOL 123 lab, CHEM 105 course with CHEM 106 lab, CHEM 120 course with CHEM 121 lab, GEOL 111 course with GEOL 113 lab, PHYS 180 course with PHYS lab, or PHYS 255 course with PHYS 256 lab.

2.5 Relationship of the proposed course to courses offered in other institutions:

Many institutions offer an introductory course in biological psychology in addition to more advanced topical courses. In most, the status of psychology as a natural science is strongly emphasized. A substantial fraction of introductory natural science classes at all institutions have a laboratory class that accompanies them. Surprisingly, introductory level psychological science courses rarely have an accompanying lab. Only the following have been identified thus far:

American University PSY116-003 Psychology as a Natural Science Laboratory

3. Discussion of proposed course:

3.1 Schedule type: C (Lecture, Lab)

3.2 Learning Outcomes follow those of PSYS160 and will use lab activities to achieve the following:

- 3.2.1 Demonstrate an understanding of research ethics and methodology within biological psychology, including structural and functional analysis of biological and psychological systems and the impact of scientific and therapeutic intervention on thought and behavior
- 3.2.2 Explain the basic principles involved in neurobiological development, sensory machinery and perceptual systems, influences of gene-environment interactions on behavior, the neuroscience of cognition, social and affective neuroscience, and biological etiologies of psychopathology
- 3.2.3 Apply neuroscientific principles to investigate the role of biological systems underlying thought and behavior and to make predictions about the connection between behavior and molecular biology and physiology within the disciplines of psychology
- 3.2.4 Explain the connection between normal/abnormal neurophysiological processes and normal/abnormal human cognitive and socioemotional functioning

3.3 Content outline:

The following representative schedule provides a sample of the kinds of labs that will be held. They are not technically demanding, but they do expose students to the types of approaches used in brain research and require rigor in terms of data collection and analysis.

1 Introduction, Human Brains

An overall introduction to laboratory methods, followed by examination of whole, and partially dissected / sliced human brains. For a number of reasons, including ethical reasons, students will not be able to dissect brains themselves. This, of course, provides a natural introduction to a discussion of a number of ethical questions.

2 Dissection of Sheep Brains

In trying to understand the structure of the brain, nothing can replace the hands-on experience of dissecting a brain. It is not practical (and likely not ethical) to allow students access to human brains, but sheep brains allow for dissection that shows all the major structures of the brain. Each pair of students will have their own brain to dissect, and will make notes and drawings on that dissection.

3 Microscopy

It is hard to appreciate the microstructure of the brain without the hands-on experience of examining stained brain sections under a light microscope. Students will examine slides of the brains of a number of species, and make simple sketches of the structure.

4 Osmosis

Experiments that led to the understanding of how the cell membrane functions are typically very simple conceptually, but very complex in terms of the technology that needs to be used. The expense entailed in providing electrophysiological equipment for multiple students is prohibitive. Instead, to help students think about ions, we will use simple experiments on osmosis that will require almost no equipment, yet still convey much of the logic of neurophysiology.

5 Effect of caffeine on RT

A major branch of biological psychology is the examination of the effects of drugs on brain and behavior. One psychoactive drug used by most students is caffeine. Students will be required to come to the lab without consuming caffeine that morning, bringing their favorite beverage to class. They will take a simple cognitive test, consume the beverage, and after a one hour wait, take a retest. They will then plot their results, and those from the rest of the class. Students who do not habitually consume caffeinated drinks will act as a small control group that will control for the effects of practice in this test-retest design.

6 Habituation to ice pain

The perception of pain entails complex interactions of mind, brain, and body. A simple method of studying the perception of pain is for a volunteer to place their arm in ice-cold water. After a while, this begins to hurt. Volunteers have total control over their pain – they simply remove their arm from the water. Students will be free to volunteer to be experimental participants or not; the

author confirms that he will always be a participant when instructor for this course.

7 Structured interview / cafeteria feeding

A central technique in psychological science is to collect experimental data that is not realized by the participant to be actually part of the experiment. We here combine this approach with a simple structured interview – itself a standard technique. As participants are asked questions over about one hour, they are invited to eat cookies if they wish. It is expected that more cookies will be eaten if a variety are present.

8 Measure the magnitude of a visual illusion

We will begin with a simple visual illusion – for example the Muller-Lyer illusion that is very (introspectively) compelling. Two different psychophysical approaches will be used to estimate the size of this illusion of length.

9 Stanford Prison Experiment Movie

Understanding how to investigate the genesis of aggression, especially aggression in apparently normal, well adjusted people is an important part of the science of biological psychology. However, allowing students to run a traditional laboratory in this would likely be very problematic. To solve this conundrum, students will view and critique the movie made of the Stanford Prison Experiment – a classic experiment that showed how simply assigning roles to people can bring out the very worst in all of us. This movie is a relatively accurate portrayal of a seminal experiment.

10 Time-of-day RT experiment

The performance of our brain fluctuates considerably over a 24 hour period, as we increase in arousal to a peak, and later decline. Students will act as their own experimental participant – doing a short, simple reaction time task at different times of the day – from 7 am to 11 pm – in a diary study or online entry format. It is predicted that performance will be fastest and most accurate around mid-day for most students.

11 Baby eye-gaze experiment

The tendency of babies to choose to look at one out of two stimuli presented can be used to probe many aspects of visual cognition in the developing brain. As a baby sits on the lap of her mother and watches a video monitor, the direction of the babies gaze can readily be determined from a video camera placed atop the monitor. Archival video recordings of infant gaze will be utilized in the lab to allow students to perform this lab.

12 List-learning experiment

A simple and striking effect in learning is that material at the start of a session (or the head of a list), and that at the end are remembered well, whereas material in the middle tends to be poorly remembered due to proactive and retroactive interference.

13 Dichotic listening

An important technique for examining both selective attention, and for understanding lateralization of function in the brain is dichotic listening – presenting different auditory stimuli to the different ears, and having a subject attend to one ear or the other.

14 MRI scans

Students will be provided with a small number of (anonymized) MRI scans of persons with brain damage, and will attempt to describe the extent of the damage seen.

- 3.4 Student expectations and requirements: Students will complete in-class assignments, and in most cases will hand in a lab report at the end of class. In a few cases, students will have to carry out a short assignment in their own time, and submit a lab report before the next week.

- 3.5 Tentative texts and course materials:

There is no separate text to accompany this class, but students will need to refer to the text that they used / are using for PSYS160. Examples of texts that may be used for that class include:

Garrett, B. (2015). *Brain & Behavior: An Introduction to Biopsychology*, 4th Ed., Los Angeles: Sage.

Kalat, J.W. (2013). *Biological Psychology*, 12th Ed., Belmont, CA: Cengage Learning.

Kolb, B., Whishaw, I. Q., & Teskey, G. C. (2016). *An Introduction to Brain and Behavior*, 5th Ed., New York: Worth.

Psychology as a Biological Science. (2015). Retrieved from <http://nobaproject.com/textbooks/psychology-as-a-biological-science>

4. Resources:

- 4.1 Library resources: The library resources that are currently available (e.g., scientific journals and books) will be adequate for the course. No additional resources are required.
- 4.2 Computer resources: No additional computer resources are required for this course. Existing resources are sufficient.

5. Budget implications:

- 5.1 Proposed method of staffing: The course will be taught by current faculty. A number of faculty have expertise within biopsychology within the Department of Psychological Sciences.
- 5.2 Special equipment needed: No special equipment needed.
- 5.3 Expendable materials needed: No expendable materials are needed.
- 5.4 Laboratory materials needed: Modest laboratory materials are needed for this course, and the department will request a lab fee to pay for these.

6. Proposed term for implementation: Soonest possible

7. Dates of prior committee approvals:

Department of Psychological Sciences

March 23, 2018

Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate
