FORMAT 1

Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500).

See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/ for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE PROPOSAL
(Attach copy of syllabus)

SUBMITTED BY:

Department	**Biology and Wildlife**	College/School	**College of Natural Science and Mathematics**
Prepared by	**Abel Bult-Ito**	Phone	**907-978-2169**
Email Contact	**abultito@alaska.edu**	Faculty Contact	**Abel Bult-Ito**

1. ACTION DESIRED (CHECK ONE): Trial Course: X | New Course:

2. COURSE IDENTIFICATION: Dept: **BIOL** | Course #: **194** | No. of Credits: **1**

Justify upper/lower division status & number of credits: **This fully online biomedical research course will provide introductory knowledge of and experience with behavioral neuroscience research and the students will develop a basic understanding of the scientific method and concepts in behavioral neuroscience. The time commitment of the students will be about 40 hours, which equates to one credit hour.**

3. PROPOSED COURSE TITLE: **Behavioral Neuroscience Research**

4. To be CROSS LISTED? *YES/NO*: **No** | If yes, Dept: | Course #:

NOTE: Cross-listing requires approval of both departments and deans involved. Add lines at end of form for additional required signatures.

5. To be STACKED?* *YES/NO*: **No** | If yes, Dept. | Course #:

How will the two course levels differ from each other? How will each be taught at the appropriate level?: N/A

* Use only one Format 1 form for the stacked course (not one for each level of the course!) and attach syllabi. Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi (undergraduate and graduate versions) will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online – see URL at top of this page.

6. FREQUENCY OF OFFERING: **Fall and Spring**

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years), or As Demand Warrants

RECEIVED
OCT 26 2015
Dean's Office
College of Natural Science & Mathematics

7. SEMESTER & YEAR OF FIRST OFFERING (Effective AY2015-16 if approved by 3/31/2015; otherwise AY2016-17): **Fall 2016**

8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, **any core course compressed to less than six weeks must be approved by the Core Review Committee.**

COURSE FORMAT: (check all that apply)		*1*		*2*		*3*		*4*		*5*	X *6 weeks to full semester*
OTHER FORMAT (specify)	15-week semester class (See course manual for details).										
Mode of delivery (specify lecture, field trips, labs, etc)	Please see course schedule for details as the distribution varies from week to week. All online (40 hours total): Lecture-related activities (10 hours):										

Governance
11/11/15

- Six 1.5-hour introductory and background content modules
- One hour on other course activities, including choosing a novel experiment and providing class feedback.

Laboratory-related activities (30 hours):

- Five hours of data collection and analysis for each of four separate experiments using online behavioral video database, totaling 20 hours
- Four one-hour laboratory-training modules
- Four one-hour data analysis modules
- Two one-hour data interpretation modules

9. CONTACT HOURS PER WEEK:	0.5	LECTURE hours/weeks	1.5	LAB hours /week		PRACTICUM hours /week

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/guidelines-for-computing-/ for more information on number of credits.

OTHER HOURS (specify type)	N/A

10. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

Example of a complete description:

FISH F487 W, O Fisheries Management
3 Credits Offered Spring
Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or permission of instructor.*** **Cross-listed with NRM F487. (3+0)**

BIOL 194 Behavioral Neuroscience Research (1 credit)
Online biomedical research on compulsive-like mice, including data collection, data analysis, and interpretation of results. Learn about obsessive-compulsive disorder (OCD) in humans and how animal research has the potential to contribute to improving the human condition. May not be used as a biology elective credit for a major in biological sciences. Special fees apply. Only available via eLearning and Distance Education. (0.5+1.5) permission of instructor

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities		S = Social Sciences	

Will this course be used to fulfill a requirement for the baccalaureate core? **If YES, attach form.**	YES:		NO:	X

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, **Format 6**		W = Writing Intensive, **Format 7**		X = Baccalaureate Core	

11.A Is course content related to northern, arctic or circumpolar studies? If yes, a "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.

YES		NO	X

12. COURSE REPEATABILITY:

Is this course repeatable for credit?	YES		NO	X

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).	N/A

How many times may the course be repeated for credit?	N/A	TIMES
If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course?	N/A	CREDITS
If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?	N/A	CREDITS

13. GRADING SYSTEM: Specify only one. Note: Changing the grading system for a course later on constitutes a Major Course Change – Format 2 form.

LETTER: [ ] PASS/FAIL: [X]

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES	High school diploma, junior or senior standing in high school with a cumulative and science GPA of at least 3.0 with biology and chemistry course grades of at least 3.0, or permission by instructor. *UAF eLearning and Distance Education* requires high school students to complete an online form (https://elearning.uaf.edu/register/registration/), which is checked by the Student Records Specialist. They will be adding junior/senior standing and cumulative and science GPA to the form for the BIOL 194 course.

These will be *required* before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS Can we do this?	Conditions that students will have to agree to be allowed to enroll (See course manual): • You agree that you will not make any course materials, including but not limited to lectures, data, etc., available to anyone else. Doing so will violate copyright law and will be prosecuted. • You agree that you do not object to the use of the OCD mice in the experiments performed in this course. • You agree to waive any ownerships rights to any of the data collected or findings in this course. • You agree to waive any rights to authorship related to any data or findings obtained during this course. • You agree that any findings related to the delivery of this course maybe be published. Neither your name nor any other personal data will be released in such publications. • High school students are encouraged to enroll to get an exiting first experience with college-level research that is scientifically cutting-edge. If less than 18 years of age, parental permission is required before enrollment is granted, you must be a junior or senior high school student, and have an overall and science high school GPA of at least 3.0 with biology and chemistry course grades of at least 3.0 • You will be required to successfully complete online institutional animal care and use committee (IACUC) training before you are given access to the behavioral data videos. You will be withdrawn from the course if you have not completed this training by the end of the second week, i.e., by 11:59pm Alaska standard time on Friday 18 September 2016.

16. PROPOSED COURSE FEES	$125
Has a memo been submitted through your dean to the Provost for fee approval? **Yes/No**	Yes, please see signed memo by Provost Susan Henrich dated 3/2/15 for the BIOL 193 course, which is identical.

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously? **Yes/No**	**Yes**
If yes, give semester, year, course #, etc.:	Fall 2015, BIOL 193 Behavioral Neuroscience Research, CRN 79024, enrollment as of 09-13-15 is 14 (and 7 in BIOL 043, MORE Behavioral Neuroscience Research, CRN 79331; non-credit companion course described below). Also proposed as BIOL 193 (and BIOL 043) again

for spring 2016, which is submitted concurrently.

18. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

The $100 research fee will cover the expenses related to animal care of the mice to be used in this course, supplies for the behavioral studies and the novel experiment the student will participate in as a group, and research equipment.

A $25 distance delivery fee will cover the costs to have the course delivered online through *UAF eLearning and Distance Education*. *UAF eLearning and Distance Education* will request this fee.

Please see the Justification For Action Requested section below for additional details and context.

BIOL 194 tuition will cover instructional costs.

The behavioral studies and novel experiment will be conducted in Dr. Abel Bult-Ito's animal suite in the BiRD building. Therefore, no additional space or facilities are needed to offer this new course.

The instructor's workload is expected to include 1 workload unit (WU) for the MORE course, 1 WU for BIOL 194, and 1 WU for two new course preps to collect additional animal video resources.

Deans, Directors, graduate students, technicians involved with the animals, etc., will be made aware of this course in case students, parents, or even the public call the department with concerns. They were given information about all appropriate approvals and internal controls related to the animal experiments performed for this course before the start of the fall 2015 semester. Additional people becoming involved will be given this information as soon as possible.

19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No	X	Yes		No textbook will be used for this course. Most peer-reviewed journals used in this course are available to the public on NIH PubMed Central. No other library resources will be needed for this new course.

20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

This proposal will have minimal impact on the Department of Biology and Wildlife and its programs. It is a non-majors course and will not impact the Biological Sciences or Wildlife and Conservation majors. In fact, it could result in students becoming interested in the programs offered by the department and as a result increase the number of majors.

21. POSITIVE AND NEGATIVE IMPACTS

*Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.*

Positive impacts:

- Provide a fully online science research course that is the first of its kind (other than the special topics 193 course already offered, which is the same course as the 194 proposed trial course).
- Provide an introductory behavioral neuroscience research course that prospective students, i.e., high school juniors and seniors and recently graduated high school students, and undeclared undergraduate students, can take to explore a potential major in Biological Sciences or Wildlife and Conservation. This could increase the number of majors in the Department of Biology and Wildlife.
- The current BIOL 193 (and non-credit BIOL 043) version of this course was partially funded by UAF BLaST to develop an online research curriculum for rural students. Continuing to offer this course as BIOL 194 will allow me to also offer Individual Study opportunities for rural students at the 397 and 497 level by expanding the BIOL 043/194 online backbone.

Negative impacts:

- Although this course could take away some time from my teaching of majors courses (if the department needed me to do more of this), I should be able to continue to teach the majors course I am currently teaching, which is BIOL 417/617 Neurobiology.

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

This request is in the context of the offering of a massive online research experience (MORE) course in behavioral neuroscience research (BIOL 043). The online MORE course is an adaptation of the massive open online course (MOOC) model that has been gaining much interest and traction in the past few years. As with the MOOC model, students can take this class without paying tuition, but the important difference is that they will have to pay a modest $100 research course fee, which pays for animal care and research costs, and $25 distance delivery fee, which pays for the distance delivery costs involved in offering this course. Successful completion of at least 70% of course activities will earn the students a **Certificate of Completion**, but no college credit. The goals of the MORE course are to offer an introductory biomedical research experience to online students from Alaska, the US, and around the world that is an equivalent experience to students who work in the physical research laboratory and to expose novice or potential college students to the scientific research method with hands-on research activities. **This BIOL 194 course proposal does not ask for approval or evaluation of the MORE course (BIOL 043). The MORE course description is only intended to provide sufficient context for this proposal.**

The students can enroll in this one-credit trial course, BIOL 194 Behavioral Neuroscience Research, to earn one UAF credit hour by completing at least 70% of the course activities successfully (Pass/Fail). My intent is to change this course to a new course (BIOL 143?) after it has been successful another year.

The goals of the BIOL 194 course are to offer an introductory undergraduate biomedical research experience to online students that is an equivalent experience to students who work in the physical research laboratory and to expose novice or potential college students to the scientific research method with hands-on research activities. I will be targeting junior and senior high school students, including honors and AP biology and chemistry students, recent high school graduates, and freshmen and sophomore undergraduate students who are considering biological sciences as a major. Most students are expected to reside in Alaska, but potential undergraduate students from outside of Alaska may be interested to see what UAF has to offer.

The *UAF Office of eLearning and Distance Education* has agreed to support this course, including technical expertise for setting up and maintaining the online portal, storage and retrieval of the data videos, and instructional design.

The estimated costs of providing the behavioral video database and the videos for the novel experiment the students will be choosing is $7,500: $5,000 for animal care and $2,500 for research supplies and equipment. I hope to enroll 75 students in the BIOL 043 and BIOL 194 courses, which explains the $100 research course fee: 75 x $100 = $7,500. Tuition will pay for instructional costs and support by the *UAF Office of eLearning and Distance Education*. In addition, the $25 distance delivery fee with 75 students enrolled will generate 75 x $25 = $1,875 to support the online development of the courses. The numbers of students enrolling in these courses may be smaller, but I intend to compensate for this by other sources of funding, such as grants and reimbursement from other courses that use OCD mice, such as BIOL 213x (I was notified on 15 January 2015 that my BLaST proposal "Comprehensive online biomedical research experience for undergraduate students from rural Alaska" has been funded through spring of 2016). Therefore, the research course fee of $100 is not only modest but also very reasonable for covering the research costs.

I would like to put the $100 research course fee in perspective. Students will be "using" 18 mice each in two experiments, this equates to $1,150 in animal care costs alone ($625 for video database animals (5 cages x $1 per day x 125 days) and $525 for chosen experiment (5 cages x $1 per day x 105 days)). So the fee pays less than 9% of the cost per student not including research supplies and equipment. The reason we can offer this course is that several students will be using the same animals, so the fee can be reasonable.

This novel "Method for Crowdfunding University Classes" was disclosed in an "Invention Assignment Form to the University of Alaska Fairbanks" on 11-11-2014 and signed by me.

I have designed 3 novel experiments from which the students taking the course will choose one. Each experiment has already received IACUC approval and the videotaping of the animals has been completed. For new video resources, appropriate IACUC approval will be obtained prior to videotaping the animals and making these resources available to the students.

I hope you will appreciate the potential of this innovative method for funding UAF courses, such as BIOL 194.

With a total of 14 students enrolled in BIOL 193 (CRN 79024) and 7 enrolled in BIOL 043 (CRN 79331) this fall of 2015 (as of 09-13-15), I did not meet the 75 student goal, but by offering it again in the spring of 2016 (concurrent BIOL 193 course proposal), I will be able to obtain additional exposure and build a reputation for this novel course offering and hopefully receive the targeted enrollment for this BIOL 194 trial course.

APPROVALS: Add additional signature lines as needed.

Signature, Chair, Program/Department of: Biology + Wildlife	Date	10/26/15
Signature, Chair, College/School Curriculum Council for: CNSM	Date	~~10~~ 11-9-15
Signature, Dean, College/School of: CNSM	Date	11/9/15

Offerings above the level of approved programs must be approved in advance by the Provost.

Signature of Provost (if above level of approved programs)	Date	

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

Signature, Chair	Date	

Faculty Senate Review Committee: ___Curriculum Review ___GAAC

___Core Review ___SADAC

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

Signature, Chair, Program/Department of:	Date	
Signature, Chair, College/School Curriculum Council for:	Date	

ATTACH COMPLETE SYLLABUS (as part of this application). This list is online at:
http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/uaf-syllabus-requirements/
The Faculty Senate curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course (or changes to it) may be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES
During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

1. Course information:
❑Title, ❑ number, ❑credits, ❑prerequisites, ❑ location, ❑ meeting time (make sure that contact hours are in line with credits).

2. Instructor (and if applicable, Teaching Assistant) information:
❑ Name, ❑ office location, ❑ office hours, ❑ telephone, ❑ email address.

3. Course readings/materials:
❑ Course textbook title, ❑ author, ❑ edition/publisher.
❑ Supplementary readings (indicate whether ❑ required or ❑ recommended) and
❑ any supplies required.

4. Course description:
❑ Content of the course and how it fits into the broader curriculum;
❑ Expected proficiencies required to undertake the course, if applicable.
❑ Inclusion of catalog description is *strongly* recommended, and
❑ Description in syllabus must be consistent with catalog course description.

5. ❑ Course Goals (general), and (see #6)

6. ❑ Student Learning Outcomes (more specific)

7. Instructional methods:
❑ Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

8. Course calendar:
❑ A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

9. Course policies:
❑ Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

10. Evaluation:
❑ Specify how students will be evaluated, ❑ what factors will be included, ❑ their relative value, and ❑ how they will be tabulated into grades (on a curve, absolute scores, etc.) ❑ Publicize UAF regulations with regard to the grades of "C" and below as applicable to this course. (Not required in the syllabus, but is a convenient way to publicize this.) Link to PDF summary of grading policy for "C":
http://www.uaf.edu/files/uafgov/Info-to-Publicize-C_Grading-Policy-UPDATED-May-2013.pdf

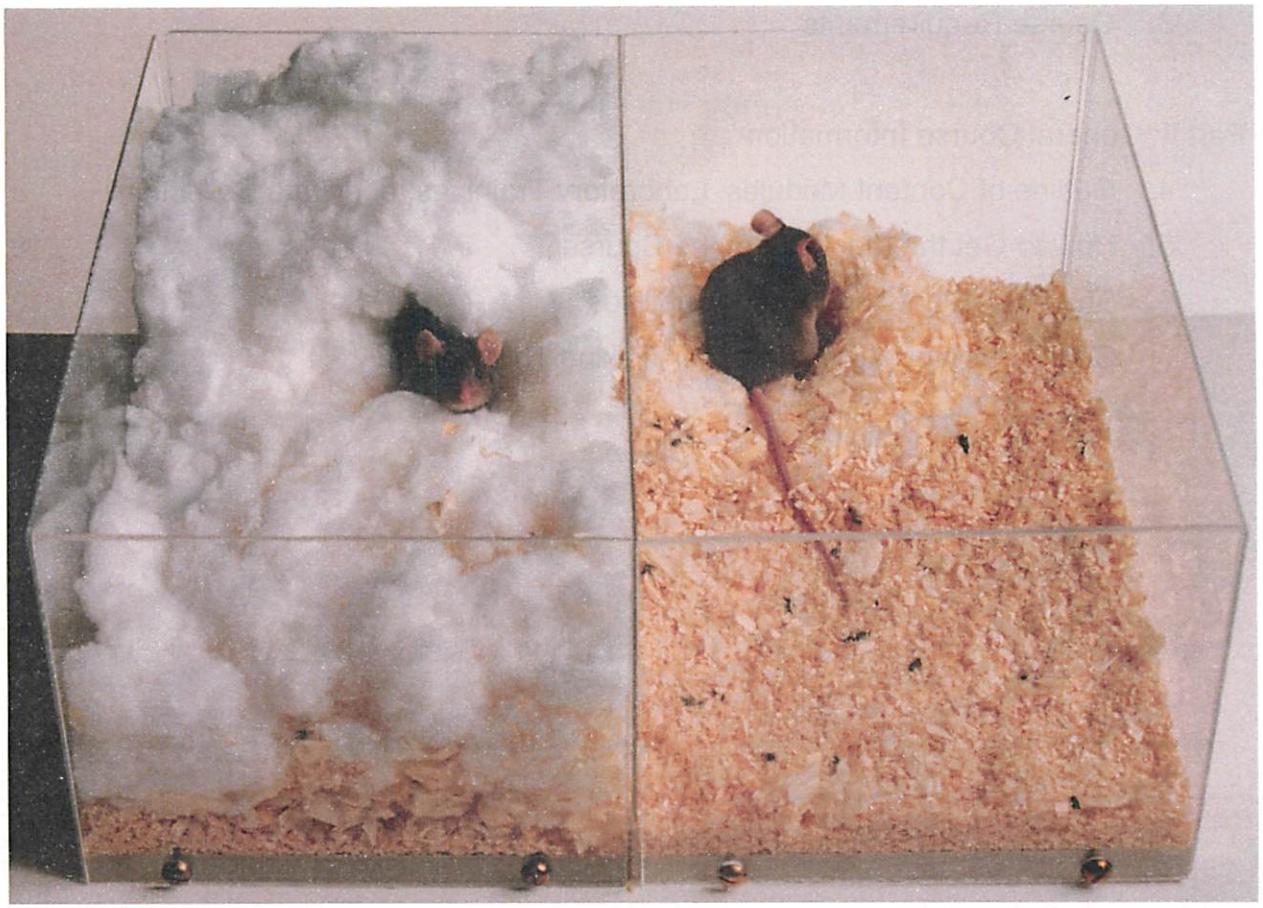
11. Support Services:
❑ Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

12. Disabilities Services: Note that the phone# and location have been **updated.** http://www.uaf.edu/disability/ The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials.

❑ State that you will work with the Office of Disabilities Services (208 WHITAKER BLDG, 474-5655)to provide reasonable accommodation to students with disabilities.

Behavioral Neuroscience Research

Course Manual



Compulsive-like (left) and non-compulsive like (right) OCD mice

BIOL 194 (1 credit)
University of Alaska Fairbanks
Fall 2016

Abel Bult-Ito

Table of Contents

Part I: Syllabus

1. Catalog Description

BIOL 194 Behavioral Neuroscience Research (1 credit)
Online biomedical research on compulsive-like mice, including data collection, data analysis, and interpretation of results. Learn about obsessive-compulsive disorder (OCD) in humans and how animal research has the potential to contribute to improving the human condition. May not be used as a biology elective credit for a major in biological sciences. Special fees apply. Only available via eLearning and Distance Education. (0.5+1.5)

2. Detailed Description of Behavioral Neuroscience Research

Welcome to Behavioral Neuroscience Research, a fully online research course! During this semester you will participate in biomedical research on mice, including data collection, data analysis, and interpretation of results. In collaboration with the other students in the course, you will choose a novel experiment that is scientifically justified, humane and ethical. You will learn about obsessive-compulsive disorder (OCD) and other conditions in humans and how basic animal research has the potential to contribute to improving the human condition. This will be an excellent opportunity for you to explore your interests in biology, and biomedical research specifically.

The goals of this course are:
To offer a comprehensive undergraduate biomedical research experience to online students from Alaska, the US, and around the world that is an equivalent experience to students who work in the physical research laboratory and to expose students to the scientific research method with hands-on research activities.

The learning outcomes of this course are:
1. Learn how to do biomedical research, including data collection, data analysis, and interpretation of results.
2. Learn how to design an experiment that is scientifically justified, humane and ethical, and provides cutting-edge new knowledge to behavioral neuroscience.
3. Learn about the obsessive-compulsive disorder (OCD) condition in humans.
4. Learn about the anxiety and depression conditions in humans.
5. Learn how basic research on an animal model has the potential to contribute to improving the human condition.

The OCD Mouse model you will be using:
The compulsive-like mouse model was developed from mouse strains artificially selected for high levels of nest-building behavior (compulsive-like big nest-builders; BIG1 and BIG3), low levels of nest-building behavior (non-compulsive-like small nest-builders; SMALL1 and SMALL3), and randomly-bred control mice (CONT1 and

CONT3), with intermediate nest-building levels (Bult and Lynch, 2000). These mice show face and predictive validity for a compulsive-like phenotype, using behavioral assessments and pharmacological treatments (Greene-Schloesser et al., 2011).

References:

Bult A, Lynch CB 2000 Breaking through artificial selection limits of an adaptive behavior in mice and the consequences of correlated responses. Behav Genet 30:193-206

Greene-Schloesser DM, Van der Zee EA, Sheppard DK, Castillo MR, Gregg KA, Burrow T, Foltz H, Slater M, Bult-Ito A 2011 Predictive validity of a non-induced mouse model of compulsive-like behavior. Behav Brain Res 221:55-62).

We will use a variety of approaches to accomplish the goals and learning outcomes, which are all available on the course online portal:

1. **Content Modules (about 9 hours).** We will discuss the format of the course, what you get out of the course, what is expected of you, and the ethics of using mice in research. In addition, we will discuss the background on the four mouse behaviors you will be researching and how these behaviors relate to obsessive-compulsive disorder (OCD), anxiety, and depression in humans.

2. **Laboratory training, data analysis, and data interpretation modules, Institution Animal Care and Use Committee (IACUC) training, and discussion boards (about 10 hours).** During these modules, you will receive detailed information on how the behavioral data of the OCD mice was obtained and how you are to collect your own data set using these behavioral videos, and how to analyze and interpret the data. In addition, you will learn about the ethical use of mice in research and how to handle the animals. You will also be asked to contribute to discussion boards related to the course content.

   You are required to successfully complete IACUC training during the first two weeks of the course. *You will be withdrawn from the course if you have not completed this training by the end of the second week, i.e., by 11:59pm Alaska standard time on Friday 16 September 2016.*

3. **Collection of behavioral neuroscience research data (about 20 hours).** For each behavior, 11-16 mice from each of six mouse lines will be individually videotaped. You will be assigned a subset of these mice to collect your own dataset. For each of four behaviors, you will spend about 5 hours to collect and analyze the data. The entire dataset from all students including all mice and four behaviors will also be made available to you. Please be advised that you may be collecting several behavioral components for each behavior.

4. **Provide course feedback (about 1 hour).** You will be asked to choose a novel behavioral neuroscience experiment in collaboration with the other students in the course. You will be asked to choose what type of experimental manipulation to conduct and what behavior(s) of the OCD mice to test. This may include treatment

with a drug and/or selection of which OCD mouse lines to use. The instructor will perform this experiment and videotape the procedures and the mice, so you can collect and analyze the data of this novel experiment. You will also be asked to provide a student opinion of instruction of the course, so we can improve it for future offerings.

This manual will act as your guide for this course. In it is a description of the course requirements, module topics, and reading assignments, as well as general information to help you get the most out of this course. You should refer to it regularly throughout the semester.

Your minimal responsibilities for this course are defined in the Course Requirements section below. Be aware, however, that your successful completion of the course activities depends on how well you integrate all of the different kinds of information you receive from content modules, trainings, reading assignments, and data collection, analysis, and interpretation activities. Therefore, do not think of those assignments as separate entities but rather as parts of a jigsaw puzzle; together the complete concepts emerge.

Instructor

Abel Bult-Ito, Ph.D.
Professor of Neurobiology
Department of Biology & Wildlife
College of Natural Science and Mathematics
University of Alaska Fairbanks

Office:	Arctic Health Research Building, Room 260
Phone:	907-474-7158
E-mail:	abultito@alaska.edu
Mailbox:	Murie Building, Room 101 (Box 6100)
Office hours:	Tuesday noon – 1pm
	Thursday noon – 1pm
	Or by appointment

Course Meeting Times and Locations

Content modules, laboratory trainings, and data sets will be available online. Generally, these will be made available on Monday 9am Alaska standard time and activities need to be completed by Friday 5:00pm (17:00) Alaska standard time.

Course Section

BIOL 193; Fxx; CRN xxxxx; Prerequisite: High school diploma, junior or senior standing in high school with a cumulative and science GPA of at least 3.0 with biology and chemistry course grades of at least 3.0, or permission by instructor. May not be used as a biology elective credit for a major in biological sciences. Special fees apply.

Course Blackboard Site and Canvas Network
http://classes.uaf.edu
https://canvas.instructure.com/

Disabilities Services
The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. We will closely work with the Office of Disabilities Services (208 Whitaker Building, 474-5655 or TTY at 474-1827; email: uaf-disabilityservices@alaska.edu) to provide reasonable accommodation to students with disabilities.

To ensure that everyone has equal opportunities to succeed in this course, please let me know if I need to accommodate any disabilities that you may have with assistance of Disability Services. Any information you provide will be held strictly confidential.

Support Services
Computer labs on the UAF main campus are available in 303 Irving I (please contact Biology and Wildlife Office to get access), MBS complex room 110, 319 Bunnell Building, and Rasmuson Library 404. You may be eligible for services from the Student Support Services, 514 Gruening Building, Phone: 474-6844, E-mail: trio.sss@alaska.edu, http://www.uaf.edu/sss/.

3. Course Requirements

To do well in this course you must watch and participate in all course activities. Your grade will be based on the following criteria:

1.	Watch Content Modules	10%
2.	Watch Laboratory Training Modules	10%
3.	Watch Data Analysis Modules	10%
4.	Watch Data Interpretations modules	5%
5.	Collect Data	50%
6.	Participate on Discussion Boards	10%
7.	Choosing Novel Experiment	2.5%
8.	Complete Course Evaluation	2.5%
	Total:	**100%**

Watch Content Modules
Whether you watch the content modules will be monitored by the Canvas Network course management system and evaluated with short online quizzes. You cannot move forward to the next module without watching the video in its entirety and completing the quizzes for each content module correctly.

Watch Laboratory Training Modules
Whether you watch the laboratory and training modules will be monitored by the Canvas

Network course management system and evaluated with short online quizzes. You cannot move forward to the next module without watching the video in its entirety and completing the quizzes for each laboratory training module module correctly.

Watch Data Analysis Modules
Whether you watch the data analysis modules will be monitored by the Canvas Network course management system and evaluated with short online quizzes. You cannot move forward to the next module without watching the video in its entirety and completing the quizzes for each data analysis module module correctly.

Watch Data Interpretation Modules
Whether you watch the data interpretation modules will be monitored by the Canvas Network course management system and evaluated with short online quizzes. You cannot move forward to the next module without watching the video in its entirety and completing the quizzes for each data interpretation module module correctly.

Collect Data
Because this is a laboratory course, data collection comprises 50% of your final grade. Whether you watch the mouse videos will be monitored by the Canvas network course management system. You cannot move forward to the next module without watching each of the assigned mouse videos and uploading the data in the appropriate spreadsheet.

For each behavior, you will collect data of about 22 animals randomly distributed among the six mouse strains. This will result in 22 data points for each behavioral component. For some behaviors, you will collect data on several different components. To get credit for data collection for each behavior, 90% of your data points need to be within an acceptable range, which will be defined for each behavior.

Participate on Discussion Boards
Your active participation in this course is expected. For each behavior, we will have at least one discussion board to which you are expected to contribute constructively. To receive credit for this activity, you should have contributed constructively to 80% of the discussion boards.

Choosing a Novel Experiment
The instructor will design 3-4 novel experiments from which the students taking the course will choose one. Each experiment will have received IACUC approval before the start of the semester. Whether you contribute to choosing the novel experiment on the OCD mice will be monitored by the Canvas Network course management system. To receive credit (2.5%), you will have to complete the online survey(s) related to this activity.

Complete the Course Evaluation (Student Opinion of Instruction)
Receiving your feedback on the course is very important for improving the course for future offerings. Your feedback will be anonymous and only provided to the instructor

after the grades have been posted. Please be advised that completion of the evaluation is mandatory, as you will not receive a grade if you do not complete it within one week of the end of the course.

Additional Activities

You are encouraged to read the suggested reading materials. You can also do your own literature research and learn more about the topics discussed in this course. Good sources for peer-reviewed literature include PubMed Central (http://www.ncbi.nlm.nih.gov/pmc/) and Web of Science/Knowledge (http://apps.webofknowledge.com).

Grading

The course will be graded on a straight percentage basis:

- 70% or more of the activities completed successfully is **Pass**.
- Less than 70% of the activities completed successfully is **Fail**

Part II: General Course Information

4. Outline of Content Modules, Laboratory Trainings, and Data Collections

(Subject to Change)

Week of the semester	Content Modules/Laboratory Trainings: Topics	Data Collections
1	Module 0: Format of the course; student expectations	Module 1: IACUC Training
2	Module 2: The ethics of using mice in research	IACUC Training
3	Module 3: Scientific background on OCD in humans and compulsive-like behavior in mice; nest-building data presentation	-
4	Module 4: Laboratory training session 1: Marble burying test (compulsive-like behavior) and Data collection 1	Marble burying test
5	Module 5: Data analysis session 1: Marble burying behavior	-
6	Module 6: Scientific background on anxiety behaviors in humans and mice	-
7	Module 7: Laboratory training session 2: Open field test (anxiety) and Data collection 2	Open field test
8	Module 8: Data analysis session 2: Open field behavior	-
9	Module 9: Scientific background on depression behaviors in humans and mice	-
10	Module 10: Laboratory training 3: Forced swim test (depression) and Data collection 3 Module 11: Students choose one behavioral experiment from 3-4 possible experiments designed by the instructor	Forced swim test Provide feedback for the choice of a novel new experiment
11	Module 12: Data analysis session 3: Forced swim behavior Module 13: Scientific background on the students' chosen topic Module 14: Laboratory training session 4: Behavioral test chosen by the students	-
12	***Thanksgiving Break***	-
13	Module 15: Data collection 4	Behavior chosen by the students
14	Module 16: Data analysis session 4: Behavioral test chosen by the students	-
15	Module 17: Interpretation of data session 1: Compulsive-like behaviors in the OCD mice Module 18: Interpretation of data session 2: Anxiety-like and depression-like behaviors in OCD mice Module 19: Interpretation of data session 3: How does it all fit together	Provide course feedback to improve future courses on behavioral neuroscience

5. How to Get the Most Out of the Course

1. On average, you need to spend two-five hours per week on this course to be successful. Some weeks, you may only spend two hours on course activities, while other weeks this may be five hours.

2. Do the assigned readings before watching the content modules. This will help you understand the module material and see how a topic is going to be developed. Watching the modules prepared will also give you the necessary background to enjoy and absorb the content.

3. Establish a schedule of activities that includes some time set-aside for review. For example, as we discuss the results of the open field test, review the data analysis and interpretation of the marble-burying test, so you can put the new information into the proper context.

4. Don't be embarrassed or afraid to admit that you are having difficulty. We should all work together to see that everyone learns. Please contact me because I want this course to be a successful learning experience for everyone. I have office hours because I want to help you succeed; use me!

5. Ask questions. This is the best way you have for clearing up confusing points and misunderstandings and to go beyond what we talked about in content modules and the laboratory. Learning to ask questions is the first skill that a scientist has to develop in order to find meaningful answers.

6. Have fun! Nothing works better than enjoying what you are doing. Please let me know at any time what I can do to improve the course.

6. Students' Rights and Responsibilities

The university subscribes to principles of due process and fair hearings as specified in the "Joint Statement on Rights and Freedoms of Students." This document can be found in the Division of Student Services. You are encouraged to read it carefully.

Most students adjust easily to the privileges and responsibilities of university citizenship. The university attempts to provide counsel for those who find the adjustment more difficult. UAF may terminate enrollment or take other necessary and appropriate action in cases where a student is unable or unwilling to assume the social responsibilities of citizenship in the university community.

STUDENT CODE OF CONDUCT

UAF students are subject to the Student Code of Conduct. In accordance with board of regents' policy 09.02.01, UAF will maintain an academic environment in which freedom to teach, conduct research, learn and administer the university is protected. Students

will benefit from this environment by accepting responsibility for their role in the academic community. The principles of the student code are designed to encourage communication, foster academic integrity and defend freedoms of inquiry, discussion and expression across the university community.

UAF requires students to conduct themselves honestly and responsibly, and to respect the rights of others. Conduct that unreasonably interferes with the learning environment or violates the rights of others is prohibited. Students and student organizations are responsible for ensuring that they and their guests comply with the code while on property owned or controlled by the university or at activities authorized by the university.

The university may initiate disciplinary action and impose disciplinary sanctions against any student or student organization found responsible for committing, attempting to commit or intentionally assisting in the commission of any of the following prohibited forms of conduct:

a. Cheating, plagiarism or other forms of academic dishonesty
b. Forgery, falsification, alteration or misuse of documents, funds or property
c. Damage or destruction of property
d. Theft of property or services
e. Harassment
f. Endangerment, assault or infliction of physical harm
g. Disruptive or obstructive actions
h. Misuse of firearms, explosives, weapons, dangerous devices or dangerous chemicals
i. Failure to comply with university directives
j. Misuse of alcohol or other intoxicants or drugs
k. Violation of published university policies, regulations, rules or procedures
l. Any other actions that result in unreasonable interference with the learning environment or the rights of others.

This list is not intended to define prohibited conduct in exhaustive terms, but rather offers examples as guidelines for acceptable and unacceptable behavior.

Honesty is a primary responsibility of you and every other UAF student. The following are common guidelines regarding academic integrity:

1. Students will not collaborate on any quizzes, in-class exams, or take-home exams that contribute to their grade in a course, unless the course instructor grants permission. Only those materials permitted by the instructor may be used to assist in quizzes and examinations.
2. Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses, and other reports.
3. No work submitted for one course may be submitted for credit in another course

without the explicit approval of both instructors.

Alleged violations of the Code of Conduct will be reviewed in accordance with procedures specified in regents' policy, university regulations and UAF rules and procedures. For additional information and details about the Student Code of Conduct, contact the dean of students or visit www.alaska.edu/bor/.

STUDENT BEHAVIORAL STANDARDS

Education at the university is conceived as training for citizenship as well as for personal self-improvement and development. Generally, UAF behavioral regulations are designed to help you work efficiently in courses and live responsibly in the campus environment. They are not designed to ignore your individuality but rather to encourage you to exercise self-discipline and accept your social responsibility. These regulations, in most instances, were developed jointly by staff and students. Contact the dean of students for more information.

7. Conditions You Agree To When Taking This Course

1. You agree that you will not make any course materials, including but not limited to content modules, data, data videos, etc., available to anyone else. Doing so will violate copyright law and will be prosecuted.
2. You agree that you do not object to the use of the OCD mice in the experiments performed in this course.
3. You agree to waive any ownerships rights to any of the data collected or findings in this course.
4. You agree to waive any rights to authorship related to any data or findings obtained during this course.
5. You agree that any findings related to the delivery of this course maybe be published. Neither your name nor any other personal data will be released in such publications.
6. High school students are encouraged to enroll to get an exiting first experience with college-level research that is scientifically cutting-edge. If less than 18 years of age, parental permission is required before enrollment is granted, you must be a junior or senior high school student, and have an overall and science high school GPA of at least 3.0 (or equivalent) with biology and chemistry course grades of at least a B (or equivalent).
7. You will be required to successfully complete online institutional animal care and use committee (IACUC) training before you are given access to the behavioral data videos. You will be withdrawn from the course if you have not completed this training by the end of the second week, i.e., by 11:59pm Alaska standard time on Friday 16 September 2016.

UNIVERSITY OF ALASKA FAIRBANKS

College of Natural Science and Mathematics

Date: 16 January 2015

To: Susan Henrichs Approved Susan Henrichs 3/2/15
Provost
University of Alaska Fairbanks

Through: Paul Layer
Dean
College of Natural Science and Mathematics

Diane Wagner DocuSigned by: Diane Wagner 8FC1EFC5C34649C...
Chair
Department of Biology and Wildlife

From: Abel Bult-Ito
Professor of Neurobiology
Department of Biology and Wildlife

Re: $100 Research Course Fee for a New Trial Course BIOL 193 MORE Behavioral Neuroscience Research and its non-credit MORE course equivalent

Dear Provost Henrichs,

I would like to request your approval for the implementation of a $100 research course fee for the new trial course BIOL 193 MORE Behavioral Neuroscience Research and its tuition-free MORE course equivalent starting in Fall 2015.

This request is in the context of the offering of a massive online research experience (MORE) course in behavioral neuroscience research. The online MORE course is an adaptation of the massive open online course (MOOC) model that has been gaining much interest and traction in the past few years. As with the MOOC model, students can take this course without paying tuition, but the important difference is that they will have to pay a modest $100 research course fee, which pays for the research costs involved in offering this course. Successful completion of at least 70% of course activities will earn the

students a *Certificate of Completion*, but no college credit. The students can enroll in the one-credit BIOL 193 MORE Behavioral Neuroscience Research trial course to earn one UAF credit by successfully completing at least 70% of the course activities (Pass/Fail) and paying UAF tuition and fees for the one credit.

The goals of this MORE course are to offer a comprehensive undergraduate biomedical research experience to online students from Alaska, the US, and around the world that is an equivalent experience to students who work in the physical research laboratory and to expose novice or potential college students to the scientific research method with hands-on research activities. *UAF eLearning & Distance Education* has agreed to support this course, including technical expertise for setting up the online portal, storage and retrieval of the data videos, and instructional design.

I would like to put the $100 research course fee in perspective. Students will be "using" 18 mice each in two experiments, this equates to $1,150 in animal care costs alone ($625 for video database animals (5 cages x $1 per day x 125 days) and $525 for chosen experiment (5 cages x $1 per day x 105 days)). So the fee pays less than 9% of the cost per student not including research supplies and equipment. The reason we can offer this course is that several students will be using the same animals, so the fee can be reasonable.

I plan to offer these two courses, MORE course and BIOL 193 course, concurrently for the fall 2015 semester, and every fall semester thereafter.

I hope you will appreciate the potential of this innovative method for funding not only a MOOC adaptation, but also UAF courses, such as BIOL 193.

I very much hope that you will approve this request for a $100 research course fee for trial course BIOL 193 and its MORE course equivalent.

UNIVERSITY OF ALASKA
FAIRBANKS
College of Natural Science and Mathematics

Financial Research Course Fee Agreement

For

Massive Online Research Experience (MORE) Course in Behavioral Neuroscience
(Certificate of Completion)
&
BIOL 193 Behavioral Neuroscience Research Course (1 credit)

Rationale:

- Up front course fees are a research course fee of $100 to cover research costs and an online fee of $25 to cover distance delivery costs. Doing biomedical research is very costly and the course fee will pay for these costs.
- When 75 or more students have enrolled in the course, it is a go. The BLaST proposal that incorporates the behavioral video database has been funded (#1501CD-1; 1/1/15 through 6/30/16), which reduces the startup costs and will allow the offering of these two courses with an enrollment below 75.
  - It costs $7,500 to produce the MORE course and BIOL 193.
    - $5,000 for animal care.
      - Collection of video recorded behaviors (nest-building, marble burying, open field, forced swim test): 6 (mouse lines) x 4 (cages of mice per line) x 125 days (28 days for mice to be born, 62 days of age for experiment, and 35 days to collect data) x $1 (cost per cage per day) = $3,000 + $200 (for additional animals to keep in reserve to replace experimental animals that get sick or die) = $3,200.
      - Collection of one video recorded experiment chosen by the MORE students: 4 (experimental groups) x 4 (cages of mice per group) x 105 (28 days for mice to be born, 62 days of age for experiment, and 15 days to collect data) x $1 = $1,680 + $120 (additional mice) = $1,800.
    - $500 for a digital camera and software.
    - $2,000 for research supplies and equipment.
- MORE students will be able to enroll in a one-credit BIOL 193 Behavioral Neuroscience Research course. If 48% of 75 students, i.e., 36, would enroll, this will generate $6,264 in tuition. This tuition income will be handled as regular tuition income to *CNSM* (60%) and the *UAF Office of eLearning and Distance Education* (40%). This will pay for instructional costs and technical support by *eLearning*. To support the MORE course and BIOL 193, the cost would be about 75 hours of work at a rate of $45 per hour,

which is $3,375 total cost to the *Office of eLearning*. This means that 36 students would have to enroll in BIOL 193 to recoup these costs (40% of $174 and the distance education fee of $25 per student).

- With 75 students enrolled in the MORE course and BIOL 193, the distance delivery fee of $25 will result in $1,875 to the *Office of eLearning and Distance Education*. The $25 fee for 39 projected MORE-only students is $975, which will help cover eLearning administrative and student support costs. The remainder of $900 for 36 students was explained above.

Use of MORE Program Income:

- Program income consists of MORE research course fees. This income will be distributed as follows:
  - The first $7,500 will be used to pay for the costs of the online MORE and BIOL 193 courses as outlined above (MORE Animal Care Account).
  - Any program income in excess of $7,500 will be distributed as follows:
    - The first $17,500 will fund about 50% of the animal care of the six OCD mouse lines. This will allow for the maintenance of the OCD mice for the offering of additional MORE course modules in the future (MORE Animal Care Account). The other costs to maintain the lines will be covered through other sources, such as grants, reimbursement from other courses that use OCD mice, such as BIOL 213x, and additional program income as listed below.
    - Additional program income, i.e., program income above $25,000, will be distributed as follows:
      - 40% will go to the research laboratory of Professor Bult-Ito to support scientific research on the OCD mice (MORE Bult-Ito Research Account).
      - 40% will go to *CNSM*, the home college of Professor Bult-Ito, to support research and teaching at the department and college level.
      - 10% will go to the *Office of eLearning and Distance Education* to support future offerings of MORE and BIOL 193 courses.
      - 10% will go to fund animal care of the six OCD mouse lines (MORE Animal Care Account).

Accounts for MORE Program Income:

- All accounts in this category are under the control of Principal Investigator Dr. Abel Bult-Ito or his designee(s).
- All funds in the accounts carry over from year to year without penalty.
- The accounts include:
  - A MORE Animal Care Account.
  - A MORE Bult-Ito Research Account.

Approved by:

CNSM Dean Paul Layer — Feb 25, 2015 (Date)

eLearning Executive Director Carol Gering — 2-4-15 (Date)

Professor Abel Bult-Ito — 02-03-2015 (Date)