Washington State University
MAJOR CURRICULAR CHANGE FORM - - NEW/RESTORE COURSE

- ☐ **Please attach rationale for your request, a complete syllabus**, and explain how this impacts other units in Pullman and other campuses (if applicable).
- ☐ **Obtain all required signatures with dates.**
- ☐ **Provide original stapled packet of signed form/rationale statement/syllabus** PLUS **10 stapled copies** of complete packet to the **Registrar's Office**, campus mail code 1035.
- ☐ **Submit one electronic copy of complete packet** to wsu.curriculum@wsu.edu.

Requested **Future** Effective Date: Fall 2016 (term/year) Course Typically Offered: Fall

DEADLINES: For fall term effective date: **October 1st**; for spring or summer term effective date: **February 1st**. See instructions.

NOTE: Items received after deadlines may be put to the back of the line or forwarded to the following year. Please submit on time.

☒ **New Course** ☐ Temporary Course ☐ **Restore Course**

course subject/crosslist	course no.	title
NEUROSCI; MBIOS; GLANHLTH; VET_MCR /V MIC; VET_PATH / V PA; VET_PH / V PH	563	Deconstruction of Research

Credit hrs	lecture hrs per week	lab or studio hrs per week	prerequisite
3	3	0	Graduate student status in a biomedical based graduate program at WSU

Description for catalog: Nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest

Additional Attributes: Check all that apply.

☑ Crosslisting (between WSU departments)* ☐ Conjoint listing (400/500):_____

☐ Variable credit:_____ ☐ Repeat credit (cum. max. hrs):_____

Special Grading: ☐ S, F; ☐ A, S, F (PEACT only); ☐ S, M, F (VET MED only); ☐ H, S, F (PHARMACY, PHARDSCI only)

☐ Cooperative with UI ☐ Other (please list request): _____

The following items require prior submission to other committees/depts. (SEE INSTRUCTIONS.)

☐ Request to meet Writing in the Major [M] requirement **(Must have All-University Writing Committee Approval.)**

☐ Request to meet UCORE in _____ **(Must have UCORE Committee Approval › › See instructions.)**

☐ Special Course Fee_____ **(Must submit request to University Receivables.)**

Contact: Kay Brothers Phone number: (509) 335-9376 Campus mail code: 7520

Email: brothers@vetmed.wsu.edu Instructor, if different: Steve Simasko; simasko@vetmed.wsu.edu

See Attached	By KM 9-4-15	
Chair/date	**Dean/date**	**All-University Writing Com / date**
Chair (if crosslisted/interdisciplinary)*	**Dean (if crosslisted/interdisciplinary)***	**UCORE Committee Approval Date**
Catalog Subcommittee Approval Date	**GSC or AAC Approval Date**	**Faculty Senate Approval Date**

***If the proposed change impacts or involves collaboration with other units, use the additional signature lines provided for each impacted unit and college.**

Major Curricular Change Form - - NEW/RESTORE COURSE – attachment

8/20/15

Chair/Date Steve Simaskol

20 Aug 15

Chair/Date Douglas R Call

8/21/15

Chair/Date William S. Dernell

8/26/15

Chair/Date Jonathan Jones

9/1/15

Chair/Date Michele Hardy

Proposed Course: Cross listed: NEUROSCI 563; GLANHLTH 563; MBIOS 563; VET MICR 563; VET PATH 563; VET PH 563

Deconstruction of Research
Course Description for Catalog

The nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest.

Rationale, Course Structure, and Course Learning Goals and Intended Outcomes

Rationale: The proposed course, *Deconstruction of Research* has been designed to meet the needs of all of the PhD-granting programs in the College of Veterinary Medicine. As a college, we are striving to transition our PhD graduate programs from course-intensive to a training-intensive focus with the latter emphasizing training in both laboratory research and professional development.

Deconstruction of Research is based on the premise that new scientific knowledge builds from a foundation of primary evidence that requires critical evaluation through active analyses and productive discourse. Students need to understand the nature and development of scientific investigation transmitted through oral and written avenues. The students need to develop skills that allow them to understand general concepts no matter how familiar or unfamiliar the topic.

Course Structure: The course will consist of six research modules. Each research module will be divided into four sections, described in more detail in the accompanying syllabus. Two faculty members from each, School of Molecular Biosciences (SMB), Integrative Physiology and Neuroscience (IPN), Immunology and Infectious Diseases (IID), will present research seminars. Three faculty members will facilitate and serve as preceptors (one from SMB, IPN, and IID). Research assistant professors or postdoctoral scientists will assist preceptors. Preceptors will use guided inquiry to lead the students through critical analyses of each presented research module.

Guided inquiry is a form of active learning that provides an opportunity to model and develop critical thinking and analytical skills in research topics that are familiar or unfamiliar. Students will be guided through critical analyses of scientific papers and then challenged to: 1) generate a question based on the data presented; 2) propose at least one experiment designed to answer the question; and 3) identify at least one logical next objective as would be expected with development of research proposals. All of the activities described above will give first-year graduate students a foundation that is needed to conceive, design, and write research proposals required for advancement to PhD candidacy.

This course will be offered each fall semester and will serve as a required three graded credits for first year graduate (PhD) students across the college. The topics and seminar presenters in this course represent a significant breadth of research within and between units in the College of Veterinary Medicine. As such, the course will provide additional support to graduate students who at the same time are identifying laboratories as homes for pursuing research rotations prior to selecting a thesis laboratory.

Course Learning Outcomes and Assessment:

1. Students will be able to read critically and understand scientific papers.

   Topics to address the outcomes: 1) homework readings; and 2) lectures;

   Outcomes assessed by: 1) in-class discussion; 2) team-based presentation of primary literature; 3) contributions and use of Coggle Mind Map; and 4) written exams

2. Students will be able to participate productively in scientific practice and discourse.

   Topics to address the outcomes: 1) homework readings; and 2) lectures

   Outcomes assessed by: 1) in-class discussion; 2) team-based presentation of primary literature; 3) Coggle Mind Map; 4) Q&A session with research seminar presenter; and 5) written exam

3. Students will be able to write a four page proposal that: identifies a question based on the data presented; designs an experiment that will answer the question; discusses strengths and weaknesses of the proposed experiment; and explains how answering the question can be used to develop a predictive model.

   Topics to address the outcomes: 1) homework readings; and 2) lectures;

   Outcomes assessed by: 1) written exam

Deconstruction of Research

Crosslisted: NEUROSCI 563; GLANHLTH 563; MBIOS 563; VET MICR 563; VET PATH 563; VET PH 563.

Instructors:

Douglas Call	Allen Ctr 101C	Phone:	509-335-6313	Email:	drcall@vetmed.wsu.edu
Cathryn Hogarth	BLS 245	Phone:	509-335-2240	Email:	chogarth@vetmed.wsu.edu
Cheryl Miller	Allen Ctr 226	Phone:	509-335-2499	Email:	cherylmiller@vetmed.wsu.edu
John Nilson	BLS 235	Phone:	509-335-8645	Email:	jhn@vetmed.wsu.edu
Steve Simasko(primary)	VBR 205F	Phone:	509-335-6624	Email:	simasko@vetmed.wsu.edu
Murugan Subbiah	Allen Ctr	Phone:	509-335-2489	Email:	msubbiah@wsu.edu

Office Hours: TBD

Credits: 3 (45 contact hours)

Course limit: 30 students

Prerequisites: Graduate student status in a biomedical based graduate program at WSU.

Meeting Schedule: Tuesday/Thursday, 9:10 -10:25 AM in Wilson-Short Room 4

Course Description: Deconstruction of Research is based on the premise that construction of new scientific knowledge builds from a foundation of primary evidence that requires critical evaluation through active analysis and productive discourse. Students will learn and understand the nature and development of scientific knowledge transmitted through oral and written avenues. Students will learn the necessary skills required for critical analysis of general concepts no matter how familiar or unfamiliar the topic.

Textbook: There is no textbook for this course. Instead, each seminar presenter will provide two or three peer-reviewed articles that will be used to identify and resolve content gaps. Students will be responsible for reading and then leading discussion of the articles in class.

Course Structure: The course will consist of six research modules. Each research module will be divided into four sections as described below. Six different faculty members (two from each SMB, IPN, and IID) will present research seminars. Three different faculty preceptors (one from SMB, IPN, and IID) will serve as facilitators. Research assistant professors or postdoctoral scientists will assist facilitators.

The four sessions of each research module will be structured as follows:

1. **Research Seminar**

   The seminar will be limited to 50 minutes. The remaining 25 minutes of class will be used to identify knowledge gaps and begin development of mind maps using the Coggle Mind Map application (Coggle.it).

   Homework Assignment: Read two assigned papers. Teams will be formed with one member designated as the discussion leader. Attend class prepared to actively discuss topics.

2. **Critical analysis and discussion of the two assigned papers**

   These papers will be used to resolve major knowledge gaps identified in the previous session and identify new topics and concepts that will add hierarchical branches to Coggle Mind Map.

   Homework Assignment: Student teams will continue to resolve remaining knowledge gaps that will be added to the Coggle Mind Map.

3. **Deconstruction/Reconstruction**

   Students will refine the Coggle Mind Map and develop a series of questions and new ideas that will guide the subsequent Q&A session with the research seminar speaker.

4. **Q&A with the research seminar speaker**

   Student teams will present the Coggle Mind Map and use it to guide the discussion with the speaker. The overarching goal of this session is to generate new questions that will facilitate building a conceptual model of the research presented. The remaining 25 minutes of class will be used to begin the exam.

Special Sessions

Critical Analysis and Digital Technology

The course will begin with two introductory sections. The first will focus on how to read, critically analyze, and evaluate scientific papers.

The second introductory session will describe computer tools for developing mind maps and for constructing searchable digital notebooks. Both tools will facilitate and enhance critical analysis of research seminars and scientific papers.

Exam Analysis

Module 1 will end with a special section focused on how to critically analyze written exams. This session will culminate in the development of a rubric that will facilitate critical analysis. The preceptors will use the rubric and are responsible for assigning grades for each exam. The students will use the rubric as explained below.

Course Learning Goals and Intended Outcomes:

<u>Course Learning Outcomes and Assessment:</u>

1. Students will be able to read critically and understand scientific papers.

   <u>Topics to address the outcomes:</u> 1) homework readings; and 2) lectures;

   <u>Outcomes assessed by:</u> 1) in-class discussion; 2) team-based presentation of primary literature; 3) contributions and use of Coggle Mind Map; and 4) written exams

2. Students will be able to participate productively in scientific practice and discourse.

   <u>Topics to address the outcomes:</u> 1) homework readings; and 2) lectures

   <u>Outcomes assessed by:</u> 1) in-class discussion; 2) team-based presentation of primary literature; 3) Coggle Mind Map; 4) Q&A session with research seminar presenter; and 5) written exam

3. Students will be able to write a four page proposal that: identifies a question based on the data presented; designs an experiment that will answer the question; discusses strengths and weaknesses of the proposed experiment; and explains how answering the question can be used to develop a predictive model.

Topics to address the outcomes: 1) homework readings; and 2) lectures;

Outcomes assessed by: 1) written exam

Assessment of Learning

1. Class Participation – 15% total points
   Students will be assessed for their understanding of the nature and development of scientific knowledge through their participation and contribution to class discussions that include the research seminar and assigned papers.
2. Coggle Mind Map – 5% total points
   This tool will allow assessment of brainstorming ability and conceptual understanding of scientific primary, secondary, and tertiary relationships.
3. Written Exams – 80% total points
   Students will write six exams based on the research seminar presented in each module. As noted above, a shared grading rubric will be developed. Each student will write the first three exams individually. Teams identified in the second homework assignment (Module 1) will write the last three exams. These exams will be peer-evaluated in special in-class sessions using the shared grading rubric. The preceptors will use the shared grading rubric and peer-evaluations, provide feedback when necessary, and assign the exam grade. The exams will reveal what students know, what they comprehend, and how they can apply the new knowledge gained.

Written Exam Structure

All exams will follow the same format based on a question/model-building inductive framework. Essential elements include the following:

1. Identify a question based on the data presented.
2. Design an experiment that will answer the question.
3. Discuss strengths and weaknesses of the proposed experiment.
4. Explain how answering the question can be used to develop a predictive model.

Grading Policy

This is a graded course. In order to earn a passing grade, students must participate actively in class, complete assigned work and complete written exams. Grades are assigned based on a percent of total possible points rounded to the nearest whole number. See assessment of learning for point weights.

A = 100-93%; A^- = 92- 90%; B^+ = 89-87%; B = 86-83%; B^- = 82-80%; C = 79-70%; D = 69-60%; F = 59% & below

Late assignments will not be accepted.

Attendance Policy

We expect you to attend class on-time and participate fully. If you have necessary planned conflict with a scheduled class, contact Dr. Simasko. Exams missed due to illness or other unforeseen events may be eligible for a make-up exam. This requires that you contact Dr. Simasko before the exam or no later than 48 hours after the exam. Written documentation is required and must be submitted to Dr. Simasko before a make-up exam can be administered.

Statement on Academic Integrity

Academic integrity will be strongly enforced in this course. Any student caught cheating on any assignment will be given an F grade for the course and will be reported to the Office of Student Conduct. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions.

Safety and Emergency Notification

Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (http://safetyplan.wsu.edu/) and visit the Office of Emergency Management web site (http://oem.wsu.edu/) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.

Reasonable Accommodation

Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist on your home campus:

Pullman or WSU Online: 509-335-3417 http://accesscenter.wsu.edu, Access.Center@wsu.edu

Spokane: http://spokane.wsu.edu/students2/student-affairs/disability-resourcess.html

Tri-Cities: http://www.tricity.wsu.edu/disability/

Vancouver: 360-546-9138 http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services

Course Outline:

Participating Faculty (Fall 2015) and 2016 Schedule

Module	Dates	Topic	Presenter	Preceptors
Orientation	8/23, 8/25	Critical analysis of papers, mind mapping, and digital notebooks	John Nilson	
1	8/30, 9/1, 9/6, 9/8	Host immune responses to pathogenic infections	Alan Goodman (SMB)	John Nilson/ Cathryn Hogarth
Special	9/13	Exam 1 due Exam Writing and Analysis	John Nilson	
2	9/15, 9/20, 9/22, 9/27	Molecular control of the stem cell state in mammalian spermatogonia Mid-way class survey (9/29)	Jon Oatley (SMB)	John Nilson/ Cathryn Hogarth
3	9/29, 10/4, 10/6, 10/11	Exam 2 due (10/1) Feeling full: Neuronal control of food intake	Suzanne Appleyard (IPN)	Steve Simasko/TBD
4	10/13, 10/18, 10/20, 10/25	Exam 3 due (10/15) Circadian rhythms as modulators of resilience to stress	Ilia Karatsoreos (IPN)	Steve Simasko/TBD
Special	10/27	Exam 4 due Peer evaluation of Team Exams	Steve Simasko	
5	11/1, 11/3, 11/8, 11/10	Salmonella enterica colonization of intestinal epithelial cells: in vivo and in vitro	Leigh Knodler (IID)	Doug Call/ Cheryl Miller
Special	11/15	Exam 5 due Peer evaluation of Team Exams	Doug Call	
6	11/17, 11/29, 12/1, 12/6 no class 11/22, 11/24	Causal attribution in polymicrobial disease	Tom Besser (IID)	Doug Call/ Murugan Subbiah
Special	12/8 (last class)	Exam 6 due Peer evaluation of Team Exams	Doug Call	

Note that exams are started on the last session of each module and due on the first session of the next module.