



Course Approval Form

For approval of new courses and deletions or modifications to an existing course.

registrar.gmu.edu/facultystaff/curriculum

Action Requested:

Create new course Delete existing course

Modify existing course (check all that apply)

Title Credits Repeat Status Grade Type

Prereq/coreq Schedule Type Restrictions

Other: _____

Course Level:

Undergraduate

Graduate

College/School: **Department:**

Submitted by: **Ext:** **Email:**

Subject Code: **Number:** **Effective Term:** Fall Spring Summer **Year:**

(Do not list multiple codes or numbers. Each course proposal must have a separate form.)

Title: Current Banner (30 characters max including spaces)

New

Credits: (check one) Fixed Variable

Repeat Status: (check one) Not Repeatable (NR) Repeatable within degree (RD) Repeatable within term (RT) **Maximum credits allowed:**

Grade Mode: (check one) Regular (A, B, C, etc.) Satisfactory/No Credit Special (A, B C, etc. +IP)

Schedule Type Code(s): (check all that apply) Lecture (LEC) Lab (LAB) Recitation (RCT) Internship (INT)

Independent Study (IND) Seminar (SEM) Studio (STU)

Prerequisite(s): **Corequisite(s):**

Instructional Mode: 100% face-to-face Hybrid: ≤ 50% electronically delivered 100% electronically delivered

Special Instructions: (list restrictions for major, college, or degree; hard-coding; etc.)

Are there equivalent course(s)? Yes No If yes, please list _____

Catalog Copy for NEW Courses Only (Consult University Catalog for models)

Description (No more than 60 words, use verb phrases and present tense)	Notes (List additional information for the course)
Introduces vertebrates with emphasis on systematic, evolution, life history, behavior and ecology. Laboratory emphasis on identification, taxonomy, and natural history of local vertebrates	
Indicate number of contact hours: Hours of Lecture or Seminar per week: <input type="text" value="3"/> Hours of Lab or Studio: <input type="text" value="3"/>	
When Offered: (check all that apply) <input checked="" type="checkbox"/> Fall <input type="checkbox"/> Summer <input type="checkbox"/> Spring	

Approval Signatures

Department Approval _____ Date _____ College/School Approval _____ Date _____

If this course includes subject matter currently dealt with by any other units, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.

Unit Name	Unit Approval Name	Unit Approver's Signature	Date

Course Proposal Submitted to the COS Curriculum Committee

1. COURSE NUMBER AND TITLE: BIOL 468 (4:3:3)

Course Prerequisites: BIOL 303 or 310 and 307 or 308, or permission of the instructor

Catalog Description: BIOL 468 Vertebrate Natural History Introduces vertebrates with emphasis on systematics, evolution, life history, behavior, and ecology. Laboratory emphasis on identification, taxonomy, and natural history of local vertebrates.

2. COURSE JUSTIFICATION:

Course Objectives: Objectives of the course: The main objective is to provide an in-depth study of vertebrate biology and evolution, with an emphasis on tetrapods (= terrestrial vertebrates). Lectures will focus on the biology, ecology, and evolution of vertebrates. Labs will focus on the morphology, systematics, and diversity of vertebrates. The course will also teach the use of keys for identifying vertebrates and tools for studying and/or capturing vertebrates in the field. Upon completion of this course, students should: (1) have knowledge of the major taxa of vertebrates and the anatomical, morphological, behavioral, and ecological features that characterize each group, (2) be familiar with methods used to collect, identify, mark, and preserve specimens, (3) be familiar with the current nomenclature of these groups and know identifying characteristics, and (4) appreciate the diversity and evolutionary history of vertebrates.

Course Necessity: This course replaces BIOL 333 and brings a more rigorous and modern emphasis to the study of vertebrate biology.

Course Relationship to Existing Programs: One of the electives for the Biology BS and BA programs.

Course Relationship to Existing Courses:

3. APPROVAL HISTORY:

4. SCHEDULING AND PROPOSED INSTRUCTORS:

Semester of Initial Offering: Spring 2011

Proposed Instructors: Dr. Cody Edwards

5. TENTATIVE SYLLABUS: See attached

BIOL 468 (Vertebrate Natural History)

Credit: 3 hours lecture; 3 hours lab

Catalog Description: Introduces vertebrates with emphasis on systematics, evolution, life history, behavior, and ecology. Laboratory emphasis on identification, taxonomy, and natural history of local vertebrates.

Prerequisites: BIOL 303 and 307 or permission of the instructor

To be taught: Fall, odd years

Instructor: Cody W. Edwards, Ph.D.

Objectives of the course: The main objective is to provide an in-depth study of vertebrate biology and evolution, with an emphasis on tetrapods (= terrestrial vertebrates). Lectures will focus on the biology, ecology, and evolution of vertebrates. Labs will focus on the morphology, systematics, and diversity of vertebrates. The course will also teach the use of keys for identifying vertebrates and tools for studying and/or capturing vertebrates in the field. Upon completion of this course, students should: (1) have knowledge of the major taxa of vertebrates and the anatomical, morphological, behavioral, and ecological features that characterize each group, (2) be familiar with methods used to collect, identify, mark, and preserve specimens, (3) be familiar with the current nomenclature of these groups and know identifying characteristics, and (4) appreciate the diversity and evolutionary history of vertebrates.

Requirements and Grading: Performance in this course will be based on exam scores and other assignments as noted below.

Lecture Exams: Will normally include multiple choice, short answer, and essay sections. Exam will cover lecture notes, special reading assignments, and materials on hand outs. Although the lab counts 25% directly (exams, participation, etc.), knowledge of lab material will be assumed when formulating questions and grading of the lecture exams (i.e. material covered in lab will be included on exams in lecture). The final exam will be **comprehensive** over all the material (including readings) in the course. Make-up exams must be arranged **PRIOR** to the exam. Exception may be granted if (and, **ONLY IF**) (1) it is scheduled in advance; (2) I'm notified by the University of a personal/family emergency; or, (3) illness is verified in writing by your doctor (written notification must be provided to me within **1 week** of a missed exam in order for a make-up exam to be scheduled). **Make-up exams may (and often will) have a different format than regular exams.** Missed exams will result in a score of **ZERO**.

Lab Exam: Materials to be covered on each lab will be detailed in the lab sections preceding each exam. Due to time required to set-up lab practicals, make-up exams are virtually impossible. Missed exams will result in a score of **ZERO**.

Quizzes: Six quizzes will be given during the semester (in lecture). I will provide readings (to be read for quiz) at least one week in advance. Your lowest quiz grade will be dropped when calculating your final quiz score. Quizzes cannot be made up. If you miss a quiz, this, by default, will be the score dropped. Missed quizzes will result in a score of **ZERO**.

Point values for each assignment are listed below:

Lecture Exams (x2) (150 points/exam)	300 points
Quizzes/Assignments	175 points

Comprehensive Final Exam
Lab Exams (x3) (75 points/exam)
*Participation

175 points
225 points
25 points
Total: 900 points

*** To be discussed in lab.**

The total number of points accumulated will be divided by 9 to determine your course average. Average scores of 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, 0-59 = F. **No extra credit will be given and course grades are final.**

Weekend Field Trip: We will take a three day weekend field trip (date TBD) during the semester. Field activities will include small mammal trapping, mist netting for bats, mist netting for birds, bird-watching, reptile and amphibian collection, seining for fish, etc. The field trip is NOT REQUIRED, but participation is encouraged.

Lecture and Laboratory Schedule.

<u>Week of</u>	<u>Topic</u>	<u>Reading Material</u>
1	Lecture: Introduction, cladistics ; classification and origin of vertebrates Lab: Systematics and phylogeny; introduction to craniate diversity.	Chapt. 1, 2
2	Lecture: Organ systems ; fossils , continental drift ; historical biogeography Lab: Avian morphology and diversity.	Chapt. 3, 5
3	Lecture: Homeostasis, Thermoregulation and energetics; Ectothermy Lab: Avian Diversity; avian calls and songs	Chapt. 4, 16
4	Lecture: Earliest vertebrates , agnathans , hagfishes and lampreys , chondrichthyes Lab: Avian Diversity; avian calls and songs	Chapt. 6, 7
5	Lecture: Radiation of ray-finned fishes Lab: EXAM I (Birds)	Chapt. 8
6	Lecture: EXAM I Lecture: Origin and radiation of tetrapods Lab: Jawless fishes and chondrichthyan diversity	Chapt. 8, 10
7	Lecture: Amphibian biology and ecology Lab: Bony fish diversity	Chapt. 11
8	Lecture: Turtle biology and ecology Lab: Bony fish diversity	Chapt. 12
9	Lecture: Origin and radiation of diapsids Lab: Amphibian morphology and diversity	Chapt. 13, 14

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|----|--|---------------|
| 10 | <p>Lecture: Crocodylian biology and ecology;
Origin of Lepidosauromorpha; <i>Sphenodon</i> biology
and ecology</p> <p>Lab: EXAM II (“Fishes” and Amphibians)</p> | Chapt. 13, 15 |
| 11 | <p>Lecture: Squamate biology and ecology</p> <p>Lecture: EXAM II</p> <p>Lab: Squamate morphology and diversity</p> | Chapt. 15 |
| 12 | <p>Lecture: Avian characteristics and specialization
for flight, Avian biology, and ecology</p> <p>Lab: Squamate diversity</p> | Chapt. 17, 18 |
| 13 | <p>Lecture: Synapsid origin and radiation;
Geography and ecology during mammalian evolution.</p> <p>Lab: Mammalian morphology and diversity</p> | Chapt. 19, 20 |
| 14 | <p>Lecture: Mammalian biology and ecology</p> <p>Lab: Mammalian diversity</p> | Chapt. 21. 23 |
| 15 | <p>Lecture: Homo sapiens as vertebrates;
effects on biodiversity.</p> <p>Lab: EXAM III (Squamates and Mammals)</p> | Chapt. 24 |
| 16 | <p>Lecture: Comprehensive Final Exam</p> | |

Texts:

Lecture:

Pough, F. H., C. M. Janis, and J. B. Heiser. 2009. *Vertebrate Life* (8th edition). Pearson Benjamin Cummings (Publ.), San Francisco, CA. **(Required)**

Wilson, E. O. 1994. [Naturalist](#). [Warner Books](#), New York. **(Required)**

*Other readings may be assigned as necessary. Lectures are prepared assuming that you have *already done the readings*. Please read the assigned material before you come to class.

Laboratory and Field Equipment:

- Binoculars
- Boots and appropriate field clothes
- Waders or old shoes that can be worn in the water
- Leather gloves (optional)
- Hand lens (optional)