SYLLABUS for Special Offering of BIOL 3820/5280 Vertebrate Zoology with Study Away Alaska component, 29 June – 27 July 2023

INSTRUCTOR: Dr. Brad Bergstrom, 1107 Bailey SC, 333-3730 (229-444-5553 cell)
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ON-CAMPUS LECTURES (Rm 2202) 9:00 - 11:50 AM June 29, June 30, July 3, July 25, July 26
ON-CAMPUS LABS (Rm 1088) 2:00 - 4:50 PM on above dates
FINAL QUIZ AND JOURNALS DUE: July 27

Office hours will be after lecture and after lab each day, and other times by appt.

**ALASKA TRIP: assemble early on July 6 at Bailey SC loading dock to load luggage in two VSU vehicles, so that we can leave at 7:30 AM sharp. We will return to VSU on the afternoon of July 22. Flight itinerary available separately on Blazeview and Study Abroad website (p. 4 of syllabus).

This course meets VSU General Education Outcomes 1 and 4:
(http://www.valdosta.edu/academic/VSUGeneralEducationOutcomes.shtml)
and Department of Biology Educational Outcomes 1 and 2. Additionally, this course meets and exceeds the experiential learning goals of College of Science and Mathematics draft policy.

PREREQUISITES (3820): BIOL 1107, 1108 or permission of instructor
PREREQUISITES (5820): Admission into graduate program in Biology.

Further prerequisites for July 2023 BIOL 3820/5820 include full payment of Alaska trip costs and completion of waivers and other requirements as detailed in Study Away program:
https://valdosta-sa.terradotta.com/index.cfm?FuseAction=Programs.ViewProgramAngular&id=43223

Required lecture text (used in Lecture AND Lab): Pough et al. (2023, Vertebrate Life, 11th ed., Oxford University Press); this text is offered as a reduced price eBook ($49) through the Day One program at the VSU bookstore – make sure your tuition and fees are paid on or before June 28, and your eBook will be available on your personal Blazeview page at 12:01 am on July 29, for use during the first class.

Required field guide (to take to Alaska): Chester (2016, The Arctic Guide: Wildlife of the Far North (Princeton Field Guides, 106); available as flexibound or eBook (for Kindle or can be read on any device with Amazon's free download reader):

https://www.amazon.com/Arctic-Guide-Wildlife-Princeton-Guides/dp/069113975X/ref=sr_1_1?crid=VZYRSVYWQ6QF&keywords=the+arctic+guide&qid=1681495235&sprefix=the+arctic+guide%2Caps%2C95&sr=8-1

Also required: a bound (or electronic) journal, which you can use to keep a daily log of what you observed and learned about vertebrate species and their behavior, ecology, and conservation, while on our Alaska trip. VSU bookstore has lined composition books, or you may desire something more durable and weather-proof.

On-campus lecture topics/chapters: We will cover a few points from most of the chapters in Pough, but we will focus coverage on Chapters 1, 2, 3, 7, 8, 9, 11, 18, 19, 22. (Important reference timelines for major events in Earth history and vertebrate evolution are split among Chapts. 5, 10, and 20).

Lecture will concentrate on phylogenetic and evolutionary relationships of the major groups (clades) of vertebrates, with reference to major morphological features and a few physiological systems. Below is a quick-finder index to the most important of the phylogenies in the text:

Appendix. Important phylogenetic trees or cladograms (and chronograms, or time trees) from the text (Pough et al. 2023, 11th ed.)

Page	Figure #	Group
4	1.2	extant vertebrate groups
22	2.1	Metazoa major groups (simplified)
45	3.3	Chronogram of early vertebrates
100	6.1	Chronogram of early Acanthodian radiations, including Chondrichthyeans
101	6.2	Acanthodians and Chondrichthyeans
110	6.13	extant Neoselachii (sharks, rays, skates)
130	7.1	Chronogram of early Osteichthyean radiations
131	7.2	extant Osteichthyean basal groups
142	7.13	extant Teleostei groups
151	7.22	zoomed-in tree of Acanthopterygian groups (orders/families), continuing from 7.13
180	8.1	Chronogram of early Sarcopterygian radiations
181	8.2	Cladogram of Sarcopterygians (with morphological synapomorphies)
196	8.17	Derivation of hindlimb elements through successive fossil sarcopterygians
202	9.2	Simplified cladogram of the Tetrapods
203	9.1	Chronogram of major tetrapod radiations

209	9.8	Simplified cladogram of the Amniotes
218	9.17	Illustrated cladogram of sequential derivation of Amniote skull fenestration
220	9.18	Illustrated cladogram of sequential changes in Amniote ankle joint
295	13.4	Cladogram of lung ventilation in Sauropsids, with synapomorphies
398	18.1	Chronogram of Avemetatarsalia (birds, dinosaurs and sister groups)
404	18.8	Illustrated cladogram of changes in Archosaur pelvis (leading to birds)
423	19.2	Chronogram of Theropoda (bipedal dinosaurs, including birds)
424	19.3	Cladogram of Theropoda with morphological synapomorphies
456	21.1	Phylogeny (cladogram) of extant birds
492	22.1	Chronogram of major Synapsida radiations
493	22.2	Simplified cladogram of Synapsida with morphological synapomorphies
513	22.21	Illustrated cladogram of changes in Synapsid pectoral and pelvic girdles (leading to placental mammals)
520	23.2	Chronogram of major Therian mammal radiations
527	23.7	Chronogram of extant Eutherian (placental mammal) orders

On-Campus Labs will emphasize identifying (from specimens) major groups (down to orders, mostly) of vertebrates, recognizing key distinguishing features, and grouping them into larger (more inclusive) clades. Access to the above phylogenies during lab (only one computer and one print copy available) will be crucial to completing lab exercises.

Grading

Exam on July 3:	60 pts
Lab Exercises	60 pts
Daily journal (trip*)	180 pts
Final Quiz	40 pts
Attendance, attitude, etc.	20 pts.
TOTAL	360 pts

Letter Grade cutoffs for A/B/C/D will be 90/80/70/60%, or lower at discretion of instructor.

(**Additional ***5820*** req't's: grad student will help with driving and record keeping on trip.)

*For each day in the field, you will keep a diary/journal with notes about places (and ecosystem or habitat types) visited and vertebrate species encountered. For mammals, fishes, and the occasional amphibian, you need to add Latin binomial (parenthetically after common name), and also Family and Order name. For birds, the English common name will do for your journal. I will give you help with the birds and will summarize what we saw at the end of each day. You can wait