



UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

1. Course: **ZOOLOGY 571 – PALAEOBIOLOGY OF VERTEBRATES**

Lecture Sections: L01 MWF 0900-0950 ST 063 Winter 2018
Labs: B02 W 1600-1750 BI 044

Course Coordinator/

Instructor: Dr. Jessica Theodor 210-9818 BI 353 jtheodor@ucalgary.ca

D2L: ZOOL 571 L01 - (WINTER 2018) –PALAEBIOLOGY OF VERTEBRATES (W18ZOO571L01)

Biological Sciences Department BI 186; (403) 220-3140; biosci@ucalgary.ca

2. **Prerequisites:** Zoology 377, 379 or 403. See section 3.5.C in the Faculty of Science section of the online Calendar (<http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html>)

Antirequisite(s): Credit for Zoology 571 and either Zoology 571.01 or 571.02 will not be allowed.

3. **Grading:** The University policy on grading and related matters is described in “Academic Regulations, sections F.1 and F.2” of the online University Calendar (<http://www.ucalgary.ca/pubs/calendar/current/f-1.html> and <http://www.ucalgary.ca/pubs/calendar/current/f-2.html>) In determining the overall grade in the course the following weights will be used:

Midterm Examination	20%	In Class Feb. 16, 2018
Term Paper	20%	
Peer review of term papers	10%	
Leading discussion	5%	
Discussion Participation	15%	
Final Examination	30%	

There will be a final examination scheduled by the Registrar.

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min. Percent Required	93	83	80	77	73	70	68	63	60	55	50

4. **Missed components of term work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in section 3.6: <http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html>. It is the student's responsibility to familiarize himself/herself with these regulations. See also <http://www.ucalgary.ca/pubs/calendar/current/e-3.html>

5. **Scheduled out-of-class activities:** Dates and times of class exercises held outside of class hours: **Optional field trip, TBA.**

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.

Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email addy@ucalgary.ca or phone 403 220-3140.

- (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPPA). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; <http://ucalgary.ca/provost/students/ombuds>
- (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- (h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

Department Approval: ORIGINAL SIGNED _____ Date: _____
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COURSE OUTCOMES

In this course we will survey the fossil record of the vertebrate groups to examine their morphology and known diversity of different groups through time, understand major trends in their evolution, and major changes in their environments through geological time. We will use both palaeontological and neontological information to understand evolutionary trends. We will also examine the ways in which palaeontological information may be used to interpret vertebrate evolution and in systematics. We will be broadening our approach by examining certain ideas in more detail and, in the process, discovering how palaeontologists work, what information is important to them from the perspectives of neontology and palaeontology, and how information from disparate fields is brought together to help answer complex evolutionary problems.

Discussions:

The days for which discussions are scheduled are marked on the schedule. Papers will be assigned from the links posted on the course D2L site for you to access online (and print, if you wish). The class members will each be responsible for preparing and leading the discussion and exploration one week, which will be scheduled in week 1. It is the responsibility of each student to participate fully. It is the responsibility of all class members to fully appraise the assigned readings for discussion sessions, and to come prepared with questions to ask and discuss.

The discussions are meant to enhance your understanding of palaeobiology, so feel free to raise questions about concepts and ideas that you do not understand, or which require further explanation, as well as questions about why particular points raised by Benton or the other readings have been brought forward. You should take the opportunity to consult these primary sources to enhance your understanding of the material. I encourage you to discuss the readings collectively before class and to devise approaches to questions that will work to enhance the group's understanding.

ZOOLOGY 571

WINTER 2018 SCHEDULE

January	08	Introduction to the course; The fossil record: geologic time and fossilization
	10	Origin of bone and cartilage
		Discussion: expectations, Term paper assignment will be handed out; no reading for this week
	12	Agnatha and the origin of jaws
	15	Early diversification of gnathostomes
	17	Origin of paired fins
	19	Cartilaginous 'fishes'
	22	Actinopterygians and sarcopterygians
	24	Teleostei
	26	Origin of limbs and transition to land
	29	Evolution of the impedance matching ear
31	Early tetrapods and the origin of Lissamphibia	
February	02	Lepospondyli and Temnospondyli TERM PAPER TOPIC DUE
	05	Origin of Amniota
	07	Origin and radiation of Synapsida
	09	Acquisition of 'mammalian' features and the origin of Mammalia
	12	Multituberculates and monotremes
	14	Marsupial evolution
	16	MIDTERM EXAM (IN CLASS)
	19-23	READING WEEK
	26	Placentals 1: Euarchontoglires (bats, rodents and primates) TERM PAPER PROGRESS REPORT DUE
	28	Placentals 2: Afrotheria
March	02	Placentals 3: Laurasiatheria
	05	Placentals 4: Hell on hooves
	07	Placentals 5: Back to the water again: whales and others
	09	Placentals 6: South American mammals
	12	The Great American Biotic Interchange
	14	Pleistocene extinctions
	16	Origin and radiation of turtles
	19	Lepidosauria
	21	Origin of snakes
	23	Back to the water 1: marine reptiles TERM PAPER DUE
26	Archosauromorpha: phylogeny and basal forms	
28	Crurotarsi: crocodiles and much more	
30	GOOD FRIDAY - NO CLASS	
April	02	Ornithodira: pterosaurs and basal dinosaurs PEER REVIEWS DUE
	04	Dinosauria: phylogeny
	06	Ornithischia: bird-hipped dinosaurs
	11	Saurischia 2: theropods
	13	Origin of birds and flight REVISED TERM PAPER DUE

Term Paper

For the term paper you will select a major “event” in the evolution of the vertebrates, either the origin of a major new group with a new adaptation (tetrapods, whales) or a major new ecological niche (herbivory, flight) and document it, using evidence from palaeontology and neontology to produce an integrative synthesis, as in a professional review paper. You will be required to peer review other students papers and give feedback; you will also have the opportunity to revise your paper in response to feedback from the other students. The following guidelines apply:

- (a) Selection of a topic and submission for approval by **February 02, 2018**
- (b) Submission of an interim report outlining progress to date and literature consulted/requested on **February 26, 2018**.

Submission of the term paper on **March 23, 2018**

Peer reviews due **April 02, 2018**

Final revised paper due **April 13, 2018**