

THE DEPARTMENT OF ANTHROPOLOGY AND ARCHAEOLOGY  
THEORY AND ITS APPLICATION IN BIOLOGICAL ANTHROPOLOGY  
ARKY 617 (Fall 2017)



**Professor:** Warren Wilson

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**Office hours:** Thursday 12:30-1:30 *and*  
by appointment

**Monday** 12:00 – 2:45 in SA123

## COURSE DESCRIPTION

From Plato to Darwin to contemporary research in biological anthropology, the goal has been to explain biological variation. Why do we see such biological diversity? Why do humans and non-human primates vary as they do? I've designed this seminar to explore the history of these questions, the development of relevant theory, and contemporary work on the topic of human and non-human primate variation. In particular, we will focus on basic issues in the study of evolutionary theory as it applies to biological anthropology. This should provide you with a theoretical foundation for your own consideration of variation. We will spend the first half of the course considering the principles of evolutionary biology. The remainder of the semester will focus on the application of this theory to human and non-human primates. While evolutionary biology provides the theoretical foundation for this course, primates are both biological and cultural animals. Consequently, this course will take a biocultural approach; that is, we will consider observed variations in light of both the biological and cultural variables which may be related to the phenomena of interest.

The course assumes some prior coursework in molecular and population genetics and evolutionary theory, such as that covered in entry-level biology and biological anthropology courses. Course content and structure will be geared to the level of students in the master's program who have completed some of their coursework, but have yet to fully embark on their thesis.

It is acknowledged that many students may find greater relevance of some aspects of evolutionary theory to their research interests. This affinity will be respected in the sense that no student will be forced to apply the less-relevant aspects of evolutionary theory to their area of study. However, all students will be expected to gain a familiarity with materials covered in the course. For example, evo-devo and the debate concerning adaptation may not be directly

relevant to all students' work, but students should be able to provide a brief description of the implications of these topics to their area of research.

## COURSE LEARNING OUTCOMES

*By the end of the course, students will be able to:*

- (1) Describe, in some detail, the history of science as a way of knowing and the development of evolutionary theory;
- (2) Justify their use of the scientific or other method in their own research;
- (3) Summarize and critique the application of evolutionary theory to their sub-discipline of biological anthropology;
- (4) Verbally articulate the application of evolutionary theory to their particular research topic in a concise and compelling manner.

## READINGS

The bulk of the readings will come from selected book chapters and journal papers. Many of these are available as pdf files at the class Blackboard website. In addition, we will use the following book.

Darwin, Charles 1859. *On the Origin of Species*. **1<sup>st</sup> Edition**.

## ORGANIZATION

1. Meetings of the seminar will be devoted to discussion of selected topics. It is expected that you will accept the professional responsibility to carefully read the materials assigned and participate actively in the discussion.
2. Worksheets and/or essays will be assigned for each topic and collected periodically. All written work must be typed.
3. Each member of the seminar will be responsible for leading two class meetings and individually leading one class meeting.
  - a. *Round one*: Students will choose class #3, 4, 5, or 6 to lead.
  - b. *Round two*: Students will choose class #9, 10, or 11 to lead. The topics covered here will be determined by the students with input from me.

## EVALUATION

Readings and Discussion

30%

Due date: weekly

Each week a selection of readings and questions will be assigned. Questions will be designed to ensure comprehension of the material and to facilitate discussion. I will occasionally collect your answers to evaluate your understanding of the assigned material. The discussion should reflect a critical evaluation of the material presented. A critical evaluation requires a clear understanding of the evidence presented and a careful consideration of alternative explanations for the outcomes. It is to your advantage to cite relevant literature when discussing particular papers and topics. This literature may be from earlier class meetings and, hopefully, from material you have covered elsewhere.

Leading class (first time)

10%

Due date: depends on class lead

Leading class (second time)

15%

Due date: depends on class lead

Leading a class requires you to do the following:

1. *Select articles for the class* (due 11 days prior to the class):

These articles should provide the students with a bit of history on the topic as well as the state of the science. The class leader must send the articles selected to me at least 11 days prior to the class so that I have a bit of time to evaluate them before you post them for the other students. I generally have a list of papers which will provide you with a starting point on the topic. For the first class that you lead, you will have less flexibility in choosing articles as I want to ensure that the seminal pieces on each topic are covered.

2. *Write discussion questions* (due 8 days prior to the class):

These questions should lead the rest of us to write a summary and critique of each assigned reading and to stimulate discussion. It is often a good idea to ask your peers to compare and contrast articles which reach different conclusions. You may wish to ask provocative questions to stimulate discussion. While questions asking for a description of the studies in question can help to ensure comprehension, they do not often generate discussion. Please send your questions to me electronically.

3. *Write an introduction to the topic* (due 8 days prior to the class):

The introduction must summarize why the topic is relevant, how it ties in with topics covered in other class meetings, and what you hope will be achieved in the class. This should be roughly one paragraph. Please send the introduction to me electronically.

4. *Introduce the topic in class*:

This should be designed to give the students some background on the topic and last 15-20 minutes. While you will want to provide relevant history and perhaps more detail than is available in the readings, you need to avoid covering the material we will discuss as a class; that is, don't answer the questions which have been provided to stimulate class discussion.

5. *Facilitate discussion*:

This is often the most challenging aspect of leading the class as it requires you to think on your feet, asking the class questions to stimulate critical evaluation of the topic covered. You might ask for alternative explanations of observed outcomes, what we can learn from the author(s) research methods, and how we might improve upon the study. When thinking about questions for step 2 above, it is a good idea to keep a few up your sleeve to stimulate discussion when necessary.

6. For second class lead - *Paper summarizing* the state of the science-

As above, the individual leading this class will be responsible for handing in a 2500-3000 word summary-critique of the state of the science on the topic they cover in the second class they lead. If your topic concerns an adaptation to a particular stress, you should summarize what we know today about various genetic, phenotypically plastic, and behavioural adaptations to this stress. If your topic concerns something like balanced polymorphisms, you must summarize what we know today about the mechanisms which maintain this condition.

In choosing a topic for the second class, you should choose one that is of interest to you, but not the topic you wish to cover in your term paper. I have provided a list of potential topics for the second class you lead. You do not have to choose one of these, I only provide them as they have proven interesting in the past.

**Paper Assignment #1:                      10%                      Due date: November 10**

The state of evolutionary theory in your sub-discipline: This assignment requires you to review at least 5 papers in your sub-discipline published in the last 20 years to assess the state of evolutionary theory in your sub-discipline. That is, is evolutionary theory used in these works? If yes, how? If not, how might the paper be strengthened via an inclusion of evolutionary theory? The papers considered must: (1) be seminal or at least very influential in the sub-discipline\*, (2) be drawn from disparate areas in the sub-discipline which address different questions and use different methods, (3) reflect at least different two schools of thought within the sub-discipline. In this paper, you should: (1) summarise the main points of the paper, (2) summarise the degree to which evolutionary theory explicitly or implicitly underlies the work (In this you must think about all aspects of evolutionary theory. Does the paper consider variation, mechanisms of evolution such as drift, mutation, gene flow, sexual & natural selection, etc.?) (3) critique, in light of evolutionary theory, the conclusions reached; (4) summarise the state of the sub-discipline's use of evolutionary theory. Essentially you should ask yourself whether or not each paper is well grounded in current evolutionary theory and may make recommendations for the direction of the discipline on the basis of your review. Note that I am only asking you to critique the paper as it relates to evolutionary theory; that is, you need not critique other perceived strengths / weaknesses of the paper. The paper must be 2000-3000 words and be submitted electronically.

\* A seminal paper is one which is referenced often and concerns big, often theoretical, questions in the discipline. Examples include DeWitte and Stojanowski (2015) for human skeletal biology, Kappeler and van Schaik (2002) for primatology, Carroll (2000) for evo-devo, Wrangham & Carmody (2009) for paleoanthropology, and Kuzawa & Quinn (2009) for human population biology. While advances in methods are important, they rarely constitute seminal papers in the discipline.

Carroll (2000) Endless forms: The evolution of gene regulation and morphological diversity. *Cell* 101: 577-580.

DeWitte, SN, CM Stojanowski (2015) The Osteological Paradox 20 Years Later: Past Perspectives, Future Directions. *Journal of Archaeological Science* 23(4):397-450.

Kappeler and van Schaik. 2002. Evolution of Primate Social Systems. *International Journal of Primatology* 23(4):707-740.

Kuzawa CW, EA Quinn (2009) Developmental Origins of Adult Function and Health: Evolutionary Hypotheses Annual Review of Anthropology. Annual Review of Anthropology. 38:131-147.

Wrangham R, R Carmody (2010) Human adaptation to the control of fire. Evolutionary Anthropology 19:187-199.

**Paper Assignment #2:**                      2%                      Due date: November 15

Evaluating another student's work: Each student will read and evaluate another student's paper on the state of evolutionary theory in their subdiscipline. The critique will be returned directly to me and I will pass it along to the students. This paper must be submitted electronically.

**Term Paper Abstract:**                      2%                      Due date: December 1

This is a summary of the term paper. It must be 200 words or less and be submitted electronically.

**Presentation of Term Paper:**                      11%                      Due date: December 4

In class presentation of term paper: You will have a maximum of 20 minutes to describe your term paper. While you are free to use any type of media you wish to give this presentation, I will need to know, no later than 3 days prior to your presentation, if you will need anything in addition to a computer and digital projector. Note, this is not an opportunity to tell us what you are going to write about in your term paper, it is an opportunity tell us what your completed term paper has taught you; that is, your term paper should be finished before you present. I will give you feedback on your presentation to enable you to refine your term paper prior to turning it in.

**Paper Assignment #3:**                      20%                      Due date: December 7

Term paper: This should address a topic which is directly relevant to your research and demonstrate the application of evolutionary theory to your work. Many students have ended up using parts of this paper as either a chapter or section of their dissertation or thesis. **You must get my okay on your topic no later than 18 March.** The paper must be 5500-7000 words in length and must be submitted as a both an electronic and hard copy.

## Assignment Format, Deadlines, & Mark Breakdown

### Format for written work

- double space
- font: 12 point, Times New Roman
- 1 inch margins
- provide page numbers
- a separate title page is not necessary
- alignment – left (do not use the “justify” alignment)
- reference format- I don't care what format you use as long as it is easy for me to determine the source for the point referenced.

### Deadlines

Written work will not be accepted after 11:59 pm on the due date.

### Evaluation

Your final mark for the course will be based on the following:

Assignment	Percentage of Mark
Readings and Discussion	35%
Leading class (first time)	8%
Leading class (second time)	15%
Paper Assignment #1: Evolutionary theory in your sub-discipline	8%
Paper Assignment #2: Review of another's student's work	2%
Paper Assignment #3: Term paper	20%
Term Paper Abstract	1%
Presentation of Term Paper	11%

**Letter grade assignment:** At the end of the course, the numerical marks will be summed and a final letter grade will be assigned based on the following basis:

Percentage range	Letter grade	Percentage range	Letter grade
95 or higher	A+	68-72	C+
90-94	A	64-67	C
85-89	A-	59-63	C-
81-84	B+	54-58	D+
77-80	B	50-53	D
73-76	B-	49 or lower	F

## SCHEDULE OF TOPICS

Class	Date	Leader	Topic
1	Sep. 11	WW	Introduction
2	Sep. 18	WW	Fundamental concepts: Science, Biology, Lyell, and Malthus
3	Sep. 25		Fundamental concepts: Darwin
4	Oct. 2		The modern synthesis: mechanisms & processes of evolution
	Oct. 9		Thanksgiving ~ No Class
5	Oct. 16		Sexual selection & Epigenetics
6	Oct. 23		A Newer Synthesis: post-modern-synthesis developments
7	Oct. 30	BH & CR <sup>1</sup>	Evolutionary Developmental Biology
8	Nov. 6	WW	Adaptation- levels, problems in defining adaptation
9	Nov. 13		TBD <sup>2</sup>
10	Nov. 20		TBD <sup>2</sup>
11	Nov. 27		TBD <sup>2</sup>
12	Dec. 4		Student presentations of term papers

<sup>1</sup> This class will be taught by Dr. Benedikt Hallgrímsson and Dr. Campbell Rolian and will likely be held in the Faculty of Medicine. I will confirm the location as soon as we find a room.

<sup>2</sup> **Topic ideas for the second class you lead:** As noted above, you do not have to choose one of these. I only provide them as they have proved interesting to students in the past.

- Adaptation in humans: genetic, physiological, and behavioral mechanisms
- Stress Theory-adaptation “upside down...”
- Kin selection<sup>3</sup>
- Sexual selection<sup>3</sup>
- Group Selection vs. Individual Selection
- Adaptation to hypoxia & thermal stress
- Adaptation to infectious disease
- Adaptation to nutritional stress
- The evolution and maintenance of polymorphism in populations

<sup>2</sup> We will cover this topic briefly when discussing the modern synthesis. As both warrant greater consideration, we could easily dive into them in the second class you lead.

## **PLAGIARISM AND CHEATING**

Plagiarism: “to steal and pass off the ideas or words of another as one’s own” (Webster’s). Plagiarism will not be tolerated and will automatically result in a failing grade for the submission. Any student caught plagiarizing will also be subject to additional University sanctions. Students are expected to be familiar with the Department of Anthropology and Archaeology’s policy on intellectual honesty

## **DEFERRED EXAMS:**

A student who is absent from a test for legitimate reasons must discuss an alternative course of action with the instructor. The instructor at their discretion may transfer the percentage weight for the test to the final examination, if there is a final examination in the course, set another test, etc. An instructor will normally make this decision on the basis of verbal information provided by the student. In the event that an instructor feels that they cannot judge the veracity of the information provided, Students must be aware that they are responsible for payment of any charge associated with the medical assessment and documentation as this service falls outside the realm of services provided by the Provincial Health Care Plan. Deferral of the final exam requires Registrar approval.

## **ACADEMIC ACCOMMODATIONS**

<http://www.ucalgary.ca/access/accommodations/policy>

Students needing an Accommodation because of a Disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities

Students needing an Accommodation based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the instructor of this course.

## **ACADEMIC INTEGRITY**

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Calgary is a strong signal of each student’s individual academic achievements. As a result, the University treats cases of cheating and plagiarism very seriously. Non-academic integrity also constitutes an important component of this program.

For detailed information on what constitutes academic and non-academic misconduct, please refer to the following link: <http://www.ucalgary.ca/pubs/calendar/current/k-2-1.html>

All suspected cases of academic and non-academic misconduct will be investigated following procedures outlined in the University Calendar. If you have questions or concerns about what constitutes appropriate academic behavior or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources.

Where there is a criminal act involved in plagiarism, cheating or other academic misconduct, e.g., theft (taking another student's paper from their possession, or from the possession of a faculty member without permission), breaking and entering (forcibly entering an office to gain access to papers, grades or records), forgery, personation and conspiracy (impersonating



another student by agreement and writing their paper) and other such offences under the Criminal Code of Canada, the University may take legal advice on the appropriate response and, where appropriate, refer the matter to the police, in addition to or in substitution for any action taken under these regulations by the University

### **TEACHING EVALUATIONS / USRI (Universal Student Ratings of Instruction)**

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. **Your responses make a difference, please participate!** Website: <http://www.ucalgary.ca/usri/>

### **Writing Across the Curriculum**

Writing skills are not exclusive to English courses and, in fact, should cross all disciplines. The University supports the belief that throughout their University careers, students should be taught how to write well so that when they graduate their writing abilities will be far above the minimal standards required at entrance. Consistent with this belief, students are expected to do a substantial amount of writing in their University courses and, where appropriate, members of faculty can and should use writing and the grading thereof as a factor in the evaluation of student work. The services provided by the Writing Support, part of the Student Success Centre, can be utilized by all undergraduate and graduate students who feel they require further assistance

**Emergency Evacuation Assembly Points:** In the event of an emergency that requires evacuation, please refer to the following link to become familiar with the assembly points for the class: <http://www.ucalgary.ca/emergencyplan/assemblypoints>

### **Freedom of Information and Protection of Privacy Act: Freedom of Information and Protection of Privacy Act**

The University of Calgary is committed to protecting the privacy of individuals who work and study at the University or who otherwise interact with the University in accordance with the standards set out in the Freedom of Information and Protection of Privacy Act. Please refer to the following link for detailed information: <http://www.ucalgary.ca/legalservices/foip>  
The Department of Anthropology and Archaeology's FOIP (Freedom of Information and Privacy) policy requires all reports/examinations to be returned to students during class time or the instructor's office hours. Any term work not picked up will be placed in the Anthropology and Archaeology Office (ES620) for distribution. Any student not wishing to have their work placed in the office must make alternative arrangements with the course instructor early in the term.

**Safewalk Information:** Campus Security, in partnership with the Students' Union, provides the Safewalk service, 24 hours a day to any location on Campus including the LRT, parking lots, bus zones and University residences. Contact Campus Security at (403) 220-5333 or use a help phone, and Safewalkers or a Campus Security Officer will accompany you to your campus destination.

**Faculty of Arts Program Advising and Student Information Resources:** Have a question, but not sure where to start? Arts Students' Centre

The Faculty of Arts Students' Centre is the overall headquarters for undergraduate programs in the Faculty of Arts. The key objective of this office is to connect students with whatever academic assistance that they require.

In addition to housing the Associate Dean, Undergraduate Programs and Student Affairs and the Associate Dean for Teaching and Learning, the Arts Students' Centre is the specific home to:

- program advising
- the Faculty's Co-operative Education Program
- the Arts and Science Honours Academy
- the Faculty's Interdisciplinary Programs
- a Student Help Desk

Location: Social Sciences Room 102

Phone: 403.220.3580

Email: [ascarts@ucalgary.ca](mailto:ascarts@ucalgary.ca)

Website: [arts.ucalgary.ca/undergraduate/](http://arts.ucalgary.ca/undergraduate/)

For registration (add/drop/swap), paying fees and assistance with your Student Centre, contact Enrolment Services at (403) 210-ROCK [7625] or visit them at the MacKimmie Library Block.

Contacts for Students Union Representatives for the Faculty of Arts:

[arts1@su.ucalgary.ca](mailto:arts1@su.ucalgary.ca)

[arts2@su.ucalgary.ca](mailto:arts2@su.ucalgary.ca)

[arts3@su.ucalgary.ca](mailto:arts3@su.ucalgary.ca)

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**Ombudsman`s office:** <http://www.ucalgary.ca/ombuds/>