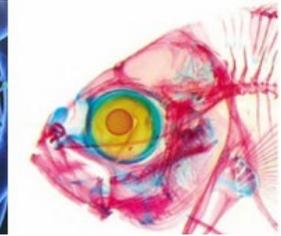
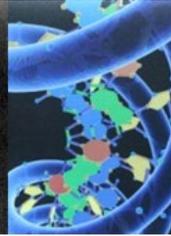
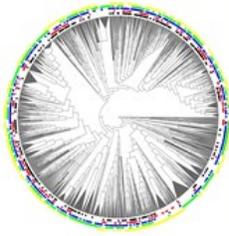


# THEORY AND ITS APPLICATION IN BIOLOGICAL ANTHROPOLOGY

## ARKY 617 (Winter 2021)



**Professor:** Warren Wilson  
**Class:** Friday, 2:00-4:45

**E-mail:** [wwilson@ucalgary.ca](mailto:wwilson@ucalgary.ca)

### How will this course run during the Covid-19 pandemic? - Summary

Alas, all of our meetings will be held via Zoom. I'd whine about this, but know that without it, we'd have no class. So, thank you Zoom! The Zoom link will be posted on D2L.

## 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 OBJECTIVES

*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 via D2L.
3. Each member of the seminar will be responsible for leading two class meetings.
  - a. *Round one*: Students will choose class #3, 4, 5, or 6 to lead.
  - b. *Round two*: Students will choose class #9, 10, 11, or 12 to lead. The topics covered here will be determined by the students with input from me.

## EVALUATION

Readings and Discussion                      35%                      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 have you place your work in [D2L>Assessments>Dropbox>Weekly questions](#) 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):	8%	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.

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:

9%

Due date: March 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 since 2010 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<sup>1</sup>, (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) summarize the main points of the paper, (2) summarize the degree to which evolutionary theory explicitly 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) summarize 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 2000-2500 words and be submitted as a MS Word or similar document in [D2L>Assessments>Dropbox>State of evolutionary theory paper](#).

Suggested structure:

- I. Introduction: Goal of the paper, rationale for this goal, how the papers selected were selected, summary of findings (evolutionary theory does/doesn't generally inform the findings). Why does this matter?
- II. Paper #1: main points:....; evolutionary mechanisms considered:...., other mechanisms which might help to explain the observed outcome/morphology/etc:....
- III.-VI. Papers #2-5
- VII. Conclusion: In my sub-discipline, evolutionary theory is/is only sometimes/is not routinely used to explain observations. For example, ... The work could be strengthened via a... This is important because...

Term Paper Abstract:

3%

Due date: April 7

This is a summary of the term paper. It must be 200 words or less and be submitted as a MS Word or similar document in [D2L>Assessments>Dropbox>Term paper abstract](#)

Presentation of Term Paper:

10%

Due date: April 9

In class presentation of term paper: You will have a maximum of 20 minutes to describe your term paper. You are free to use any type of media you wish to give this presentation. 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

---

<sup>1</sup> 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, [Rashid et al. \(2014\)](#) for evo-devo, [Power et al. \(2018\)](#) for paleoanthropology, and [Eriksson et al. \(2010\)](#) for human population biology. While advances in methods are important, they rarely constitute seminal papers in the discipline.

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: April 13**

**Term paper:** This should address a topic which is directly relevant to your research and demonstrate the application of evolutionary theory to your work. **You must get my okay on your topic no later than March 12<sup>th</sup>.** Many students have ended up using parts of this paper as either a chapter or section of their dissertation or thesis. The paper must be 5000-6000 words in length and must be submitted as a MS Word or similar document in [D2L>Assessments>Dropbox>Term paper.](#)

### Assignment Format, Deadlines, & Mark Breakdown

#### Format for written work

- double space
- font: 12 point, Times New Roman
- 1-inch margins
- provide page numbers
- do not provide a separate title page
- 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 midnight 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	9%
Paper Assignment #3: Term paper	20%
Term Paper Abstract	3%
Presentation of Term Paper	10%

**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

## TENTATIVE SCHEDULE OF TOPICS

Class	Date	Leader	Topic
1	Jan. 15	WW	Introduction
2	Jan. 22	WW	Fundamental concepts: Science, Biology, Lyell, and Malthus
3	Jan. 29	TBD	Fundamental concepts: Darwin
4	Feb. 5	TBD	The modern synthesis: mechanisms & processes of evolution
5	Feb. 12	TBD	Sexual selection
n/a	Feb. 19	n/a	Reading break - no class
6	Feb. 26	TBD	A Newer Synthesis: post-modern-synthesis developments (incl. epigenetics)
7	Mar. 5	TBD	Evolution and human behavior, Group selection(?)
8	Mar. 12	TBD	TBD <sup>1</sup>
9	Mar. 19	TBD	TBD <sup>1</sup>
10	Mar. 26	TBD	TBD <sup>1</sup>
11	Apr. 2	TBD	TBD <sup>1</sup>
12	Apr. 9	n/a	Student presentations of term papers

<sup>1</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.

- Evolutionary Developmental Biology
- Adaptation in humans: genetic, physiological, and behavioral mechanisms
- Stress Theory-adaptation “upside down...”
- Kin selection\*
- Sexual selection\*
- 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

\* 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.

## Learning Technologies and Requirements

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology.

- A computer with a supported operating system, as well as the latest security and malware updates
- A current and updates web browser
- Webcam (built in or external)
- Microphone and speaker (built in or external) or headset with microphone
- Broadband internet connection

**Academic misconduct:** The University expects Students to conduct Academic Activities with integrity and intellectual honesty and to recognize the importance of pursuing and transmitting knowledge ethically. “Academic Misconduct” includes such things as Cheating, Falsification; Plagiarism (including the use of other students’ work posted online), Unauthorized Assistance and failure to comply with exam regulations or an Instructor’s expectations regarding conduct required of Students completing academic assessments. Academic Misconduct is a serious form of intellectual dishonesty with significant consequences. Students who participate in, or encourage the commission of, Academic Misconduct will be subject to disciplinary action which could include Probation, Suspension, or Expulsion from the University. For more information see the Student Academic Misconduct Policy (<https://ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-policy>)

**Intellectual property:** Lectures, demonstrations, performances, and any other course material provided by an instructor includes copyright protected works under the Copyright Act and all forms of electronic or mechanical recording of lectures, laboratories, tutorials, presentations, performances, electronic (computer) information, the duplication of course material, and to the translation of recordings or transcriptions of any of these materials to another form by electronic or mechanical means by students is not permitted, except.

- As a formal accommodation as assessed by the Student Accessibility Services and only for individual private study and only at the discretion of the instructor.
- With the permission of the instructor, students without a formal accommodation may audio record lectures, provided that the student and instructor sign a release form available from departmental and faculty offices. A copy of the Release form shall be retained by the instructor and by the department in which the course is offered. Any audio recording by students is permitted only for the purposes of private study by the individual student. Students may not distribute, email or otherwise communicate these materials to any other person.
- For any other use, whether by duplication, transcription, publication, sale or transfer of recordings, written approval must be obtained from the instructor for the specific use proposed.
- Any use other than that described above (e.g. distributing, emailing or otherwise communicating these materials to any other person, constitutes academic misconduct and may result in suspension or expulsion.
- Students are encouraged to make notes of classroom discussions, lectures, demonstrations etc.
- See “**Copyright Legislation**” below

**Copyright Legislation:** All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (<https://ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy>) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

**Academic Accommodations:** It is the student's responsibility to request academic accommodations according to the University Calendar. Students may find information on accommodations at: <https://www.ucalgary.ca/pubs/calendar/current/b-6-1.html>. Students requesting an Accommodation on the basis of Disability are required to register with Student Accommodation Services by submitting a Request for Accommodation in accordance with the Procedure for Accommodations for Students with Disabilities (<https://ucalgary.ca/legal-services/university-policies-procedures/accommodation-students-disabilities-procedure>). Student Accommodation Services will issue a Letter of Accommodation which must be presented to either designated contact person within the Department or the appropriate Instructors within 10 days of the beginning of term. 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 their Instructor or the Department Head/Dean or to the designated contact person in their Faculty.

**Support:** If you need support beyond that provided by me, you are encouraged to take advantage of some of these resources:

[SU Wellness Centre](#) (403-210-9355 / 403-266-4357)

[Calgary Communities Against Sexual Abuse Hotline](#) (403-237-5888)

[Alberta Mental Health Hotline](#) (1-877-303-2642)

Trained peer supporters are also available on campus through:

[Women's Resource Centre](#) (4<sup>th</sup> Floor, MacEwan Centre, in The Loft)

[Q Centre for Gender and Sexual Diversity](#) (2<sup>nd</sup> Floor, Mac Hall, near The Den).

As well, if you have a serious concern about my conduct, you may speak in full confidence to either the Head of the Department of Anthropology and Archaeology, Dr. Peter Dawson ([pcdawson@ucalgary.ca](mailto:pcdawson@ucalgary.ca)), or the Associate Dean, Undergraduate Programs and Student Affairs, Dr. Virginia Tumaszk ([tumaszk@ucalgary.ca](mailto:tumaszk@ucalgary.ca)).

**Treaty Acknowledgement:** The University of Calgary, located in the heart of Southern Alberta, both acknowledges and pays tribute to the traditional territories of the peoples of Treaty 7, which includes the Blackfoot Confederacy (comprised of the Siksika, the Piikuni, and the Kainai) as well as the Tsuut'ina and the Stoney Nakoda (including Chiniki, Bearspaw, and Wesley First Nations). The University of Calgary is situated on land adjacent to where the Bow River meets the Elbow River. The University recognizes the traditional Blackfoot name of this place, Moh'kins'tsis, now known as the City of Calgary. The University recognizes that the City of Calgary is also home to Region III of the Métis Nation of Alberta. By virtue of the 1877 signing of Treaty 7, the university recognizes that we are all treaty people. The City of Calgary is home to a culturally diverse community. Together, we share this land, strive to live together, learn together, walk together, and grow together "in a good way." *ii' taa' poh' to' p*