

**Classes: Thursdays 2:30 PM -- 5:20 PM, SSC 2257** (Bio-archaeology Teaching Lab)

**Instructor name: Dr. Ian Colquhoun**

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**Course Description:**

Biological (or, physical) anthropology is a very diverse anthropological subfield encompassing such research as: the study of human evolution (i.e., paleoanthropology), the study of living and fossil non-human primates (i.e., primatology and paleoprimateology), the study of the human skeleton (i.e., human osteology), and the study of adaptations in living human populations (i.e., human biology). As in other areas of evolutionary biology, the **synthetic theory of evolution** provides the conceptual framework for considering the biological processes and fossil evidence relevant to the evolution of the human species. This means our study of human evolution and adaptation will also draw on aspects of numerous fields, including: genetics, population biology, primatology, conservation biology, ecology, and geology.

The course has a four-part structure, and will pursue an “issues-oriented” perspective. We begin with a consideration of the philosophy of science and an examination of the history of evolutionary thought. In this first segment of the course, we will consider the genetic basis of short-term and long-term evolutionary change. The second segment of the course deals with the evolution of the Order Primates; this segment also includes an overview of the taxonomy, biogeography, and socioecology of those mammalian species most closely related to humans, the living non-human primates. The third segment in the course focuses on the field of paleoanthropology -- the study of the fossil record of hominin evolution. The fourth, and concluding, segment of the course inspects the adaptations, biologic variation, and biocultural behaviour of contemporary human populations. Throughout the term, in keeping with an “issues-oriented” perspective, attention will also be given to any material relevant to the course that may appear in the academic literature and/or be reported in the media as the term unfolds.

This is also a lab course. A significant portion of your course grade will be based on the work you complete during lab sessions. These will be comprised of practical exercises that will allow you to get some “hands-on” experience in the techniques of biological anthropology, to make quantitative measurements and conduct qualitative observations, and to interpret and report on those measurements and observations. That said, in the lecture portion of the course, questions about, and discussion of, the readings is encouraged – this means you should endeavour to read each week’s assigned readings **before** coming to class!

**Learning Outcomes:** Upon successful completion of this course, students will be able to:

- appreciate, recognize, and communicate the breadth of material that constitutes the field of biological anthropology (much of which is often reported in the popular media, but not explicitly identified as being “biological anthropology”);
- identify and describe major theoretical issues in the various sub-areas of biological anthropology (i.e., evolutionary theory, primate biology and taxonomy, paleoanthropology, and human biology);
- recognize active and promising research fronts in biological anthropology;
- be familiar with basic quantitative methods employed in comparative osteology, paleoanthropology, and human skeletal biology; and,
- predict the directions where future research is most promising for major advances in the field.

**Required Text:**



Marks, Jonathan, 2017. *The Alternative Introduction to Biological Anthropology* (2nd Edition). New York and Oxford: Oxford University Press.

**Course Prerequisite:** The course prerequisites are Anthro. 1026F/G **and** Anthro. 1025F/G, or Anthro. 1020E, or permission of the instructor. There is no anti-requisite to Anthro. 2226A.

***Unless you have either the requisites for this course or written special permission to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.***

**Course Requirements:**

Course requirements (aside from the expectation of weekly attendance of lectures) will include:

- a mid-term examination (Oct. 26th -- **20%** of final grade);
- a final examination (date, place & time to be announced -- **35%** of final grade).
- three lab assignments (**15%** each, for a total of **45%** of final grade).

Both the mid-term and final exams will have a “mixed question” format; that is, they will include multiple choice, true/false, fill-in-the-blank, and short answer questions. Material covered on the exams will come from both lectures and the readings, but lecture material will be emphasized. Lectures will include material that is not covered in the course texts (a good reason to always attend class!).

Additionally, each student will be responsible for completing the required lab assignments during the course of the term. The lab assignment topics represent major elements of the material covered in the course. During classes in which there is a lab scheduled, the final half of the scheduled class time will be devoted to the lab exercise. The class will be divided into three lab groups for purposes of completing the lab exercises. Lab groups will work in rotation. **Each lab group’s assignment is to be handed in one week from the date the lab work was done** (i.e., lab reports are due in the next class after the lab). Submission of late lab assignments must include documentation to account for the late submission -- under such circumstances, there would be no late penalty assessed on late lab reports. Without such documentation, late lab reports will be penalized -1 mark for each day the lab is late. There will be no make-up labs. Switching between lab groups is highly discouraged; **this will be not be allowed without documentation of medical or compassionate grounds.**

**Academic Policies:**

All students should familiarize themselves with Western's current academic policies regarding **accessibility, plagiarism and scholastic offences, and medical accommodation.** These policies are outlined, with links to the full policies, at:

[http://anthropology.uwo.ca/undergraduate/course\\_information/academic\\_policies.html](http://anthropology.uwo.ca/undergraduate/course_information/academic_policies.html)”

**Additional Statements:**

**Statement on Use of Electronic Devices:** Students are requested to switch off cell phones while in lecture. Students are **not** permitted access to cell phones during the mid-term and final exams; electronic dictionaries, PDAs, Smart phones, etc., are not permitted during the mid-term or final exam. There will be no need for the use of calculators during either the mid-term or final exam. Students may use laptop computers to take notes during lecture, but only if this laptop usage is not a distraction to other students in the class -- use of a laptop by a student for purposes other than those directly related to the course (e.g., watching YouTube; exchanging messages over MSN; etc.) would be grounds for disallowing further use of the laptop in class by the student.

**Statement on Use of Personal Response Systems ("Clickers"):** "Clickers" will not be used in this course.

**Course Outline:**

Part I: Genetics and Evolutionary Theory:

September 7: Course introduction — Doing physical/biological anthropology.

**Readings:** Marks, ch. 1 (& take a look at ch. 14);

Supplementary readings (OWL): Scott, "Science: Truth Without Certainty"; Hrdlicka, "Physical Anthropology: Its Scope and Aims"; Fuentes, "The New Biological Anthropology".

September 14: Genetics in physical anthropology.

**Readings:** Marks, ch. 2, ch. 3;

Supplementary readings (OWL): Carroll, "The Origins of Form"; and, ch. 8: Judson, "A Terrible Scrooge"; \*and\* (**must read**) Pearson, 2006. "What is a Gene?". *Nature* **441**: 398-401.

Lab 1 (Group **A**): Mammals and Primates.

September 21: Genes and evolution at the levels of the cell, the individual, and the population.

**Readings:** Marks, ch. 4 and ch. 5;

Supplementary readings (OWL): Eldredge, "Patterns".

Lab 1 (Group **B**): Mammals and Primates.

September 28: Macroevolution, speciation, and taxonomy.

**Readings:** Marks ch. 6;

Supplementary readings (OWL): Weiner, "Evolution in Action";

\*see also\*: Rennie, 2002. 15 Answers to Creationist Nonsense. *Scientific American* **28** (1): 78-85

Lab 1 (Group **C**): Mammals and Primates.

Part II: Primate Evolution, Biology and Behaviour:

October 5: Evolution of the Order Primates.

**Readings:** Marks, ch. 7;

Supplementary readings (OWL): Prothero, "The Fossils Say Yes".

Lab 2 (Group **A**): The Fossil Hominids.

October 9-13 -- **Fall Reading Week -- no class this week!**

October 19: An introduction to the extant (living) primates, and using extant primates as models of early hominid behaviour and ecology.

**Readings:** Marks, ch. 8;

Supplementary readings (OWL): Pochron & Wright, "Dance of the Sexes"; Goodall, "Learning from the Chimpanzee: A Message Humans Can Understand"; and, van Schaik, "Why Are Some Animals So Smart?".

Lab 2 (Group B): The Fossil Hominids.

\* October 26: \***MID-TERM EXAM (20%** of final grade -- written during regular class time; no lab this day).

### Part III: Hominin Evolution:

November 2: Hominin origins, Pliocene hominins and "Early *Homo*".

**Readings:** Marks, ch. 9;

Supplementary readings (OWL): Napier, "The Antiquity of Human Walking"; Wong, "Lucy's Baby".

Lab 2 (Group C): The Fossil Hominids.

November 9: Middle and Late Pleistocene members of the genus *Homo*.

**Readings:** Marks, ch. 10;

Supplementary readings (OWL): Gibbons, "New Fossils Challenge Line of Descent in Human Family Tree".

Lab 3 (Group A): Human Variation and Adaptation.

November 16: The origin of anatomically modern humans (AMH), and confronting Neandertals.

**Readings:** Marks, ch. 11;

Supplementary readings (OWL):: Pennisi, "The Dawn of Stone Age Genomics".

Lab 3 (Group B): Modern Human Variation and Adaptation.

### Part IV: Biology of Modern Humans:

November 23: Human adaptation -- Reproduction, growth and development.

**Readings:** Marks, ch. 12;

Supplementary readings (OWL): Kretchmer, "Lactose and Lactase"; Check, "How Africa Learned to Love the Cow".

Lab 3 (Group C): Modern Human Variation and Adaptation.

November 30: Human variation and microevolution.

**Readings:** Marks, ch. 13, ch. 14;

Supplementary readings (OWL): Jablonski and Chaplin, "Skin Deep"; Culotta, "Ancient DNA Reveals Neanderthals with Red Hair, Fair Complexion".

December 7: **Review Day** -- come to class prepared with *specific questions* about material you would like to review.

\*December 10-21, 2017: **DECEMBER EXAM PERIOD**; the final exam will only include material covered since the midterm. **Date, time and location of the final exam to be announced (once this is assigned by the Office of the Registrar) -- do not make December travel plans until you know what December exam schedule will be.**