



FUNDAMENTALS OF BIOLOGICAL ANTHROPOLOGY

Department of Anthropology, University of Notre Dame



COURSE: ANTH 30101
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This course provides an overview of biological anthropology, using the evolution of *Homo sapiens sapiens* as a model for discussing the myriad of topics within the subdiscipline. We will survey how the field synthesizes the biological & cultural processes at work in shaping human adaptation, past & present.

As part of the University's Green Initiative, all readings for the class are available on Concourse, as are all PowerPoint lectures and handouts. Your grades will likewise appear on Concourse as materials are completed.

The topics below usually cover several class periods. Dates are not specifically assigned per topic, to permit you to guide the depth of discussion. However, exam dates are set and will encompass the material covered up to that point. These dates will not change.



COURSE OBJECTIVES

- using primate evolution to *Homo sapiens sapiens* as a model to explore the subfields of biological anthropology;
- exploration of our evolution by means of natural selection using a form/function/adaptation approach;
- learning how to build models to understand our evolution, and our place in the natural world;
- review of major hominin fossil finds;
- development of a critical approach to the analysis of anthropology in the professional and popular press.



READINGS

All required readings appear together in Concourse, in a folder using the headings listed below. The articles provide a mix of material from the popular press (*Scientific American*, *Discover*, etc) and professional literature (*Science*, *American Journal of Physical Anthropology*, etc.). The "extras" folders are readings with further information for those interested in the topic (historic pieces, recent publications, articles you identify during the semester). You will not be responsible for these 'extras' on your exams.

FACEBOOK

Articles of interest to this class are regularly posted on the “**BioAnthropology News**” facebook group (<http://www.facebook.com/group.php?gid=34315136474>) Many of the authors of your required readings are members -- it is an excellent resource for keeping up with recent work across the broad range of topics in biological anthropology, with commentary from researchers active in the field. Information on this page will not be on your exams, but you will be responsible to keep up with the group for you article reviews (see below).



ATTENDANCE

Attendance is strongly advised and excessive absence for discussions, movies, and assignments will prove very detrimental to your final grade. Attendance will be taken randomly during the semester, as well as monitored by completion of In-Class Activities. You will fail the course after if you miss 5 classes, regardless of your grade in the class to that point.

The 3 accepted reasons for a University-sanctioned absence are (as per your Student Handbook): *“personal illness, death in the immediate family, and duties performed for the University. Under the three special circumstances noted, the assistant vice-president for residence life is responsible for verification of the reason for the absence. When an absence is approved, an official form is forwarded to the professor(s) and deans involved.”*

If you miss an assignment ***you must present official documentation provided by the appropriate office on campus.*** ONLY documentation from Residential Life and/or Academic Services for Student Athletes and/or a Dean’s Office will be accepted.

This **does not** include:

- job interviews
- Med/Law/Grad school interviews
- school-related exams
- early departures for Fall or Thanksgiving Break
- family reunions, weddings, birthdays, etc.



IN-CLASS ACTIVITIES

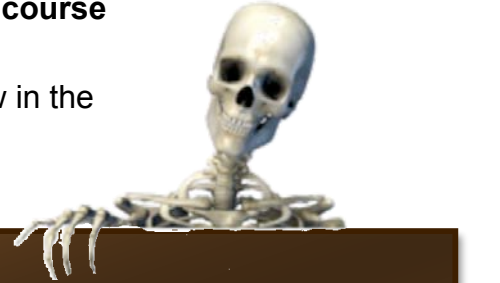
“In-class” activities will be completed during the course period. There will be several during the semester that you **will not be allowed to make-up** if you miss class; however, the assignments will be on Concourse so you can get the information for exams (ask a friend in class for the answers) – but you can not turn in the assignment after the class period for credit.

For clarity (at the risk of being redundant) – *only University accepted excused absences will be accepted.* These activities and the weekly article reviews (below) will make up 20% of your grade. In-class assignments are designed to facilitate discussion & class interaction. **No extra-credit is available to compensate for missed work.**

BI-WEEKLY ARTICLE REVIEWS

Every other Friday (beginning September 2nd) you will be responsible for an article published in the popular press or scientific literature dealing with some aspect of the topics covered in class. The article must be of substantial detail and must be current (published during the **previous month**). In addition, approximately 5 people will be asked to discuss their articles - each student must participate at least twice during the semester. **Late articles will not be accepted.** **You will be expected to post a summary for each article via Concourse before coming to class on Friday(s).**

Also, there is a handout with the required information for each review in the "Introduction" folder on Concourse – **please use this form for each assignment.**



The articles must be:

1. of sufficient length (at least 2 pages long, WITHOUT large print, ads, large spaces between paragraphs, etc.),
2. from reliable sources (not blogs -- although there are several excellent blogs in anthropology, this assignment does not include these sources),
3. published in the past month. "Early View" versions of journal articles are acceptable.
4. well summarized by you, with clear biases outlined (there are always biases). Also, be sure to summarize in your own words, **do not plagiarize** (your reviews will be checked on Turnitin.com on occasion). More on plagiarism below.
5. clearly applicable to the topics on your syllabus. Don't stretch the bounds, there's plenty to choose from already.

** You may use posts (of sufficient quality/detail and within the allotted time frame) found on the BioAnthropology News page – however, if you summarize an article that has not yet appeared there, you will get 1 point extra credit (per assignment) for searching out an original source.

Full reference: Be sure to provide complete bibliographic information and URL (if applicable) for your article.

Direct link: Make sure the URL links **directly** to your article. If I cannot read the article (incomplete URL, re-directed URL, etc), I will not grade your summary and you'll lose **all 10 pts**.

Substance: If the article is too short, you lose 3 pts. There needs to be enough information in the article you select to properly answer the questions required.

Main points: Regarding the main points of the work, do not lift them verbatim from the article (even if you use quotation marks).

Synthesize: Put the information in your own words; utilize information from class and readings.

Bias: Consider aspects such as sample size, composition, social/religious implications of the questions being asked, length of study, equipment used, assumptions, etc.

Language: Be sure to use proper Linnaean classification, and avoid 'chattiness' (this isn't an email, write accordingly).

You will be expected to discuss your article at least 2x during the course of the semester. I will initially ask for volunteers, if none rise to the occasion, I will randomly call on students.

Make sure your articles deal with some aspect covered in this course (see list of topics below). Keep it related to the order Primates and within the temporal scheme of the course.

Below you'll find a list of potential sources for your articles. This is only a partial list, there are many many more available through the library and various on-line sources.

Magazines & On-line sources --

- ScienceDaily.com
- ScienceNews.com
- Scientific American
- Discover Magazine
- American Scientist
- National Geographic
- E (the Environmental Magazine)
- New York Times (Tuesdays)
- ScienceNOW.com
- LiveScience.com
- New Scientist

Journals --

- Nature
- Science
- Primates
- Hereditas
- Human Biology
- Current Anthropology
- American Anthropologist
- Evolutionary Anthropology
- Human Evolution
- Journal of Primatology
- Amer. J. of Physical Anthropology

And sometimes --

- BBC News
- Wired.com
- Slate.com
- Internat'l Herald Tribune
- Economist
- Wall Street Journal
- Time
- Newsweek
- Mother Jones

EXAMS

The exams (two hourly and one comprehensive final) count for 20%, 20% and 25% (respectively) of your grade. **There will be NO make-up exams.**

Exam 1: Oct 7th

Exam 2: Nov 14th

Final Exam: Mon, Dec 12 (4:15-6:15 pm)

Students with disabilities should contact Disability Services (1-7157) for assistance with the course or any course materials/exams.

Be sure to get to class a bit early on exam day. **Once the first person turns in their exam, anyone entering the classroom will not be allowed to take the test** (or a makeup). So, get a good alarm clock or make a best friend who is willing to call you before the test ;-)



DATES OF INTEREST

Drop/Add Ends	Aug 30
Quiz 1	Aug 31
Exam 1	Oct 7
Fall Break	Oct 15-23
Exam 2	Nov 14
AAA Meetings	Nov 17-20
Thanksgiving Break	Nov 23-27
Quiz 2	Dec 7
Final Exam	Dec 12 (4:15-6:15 pm)
Article Reviews	alternate Fridays

QUIZES

There will be two quizzes, at the start and end of the semester.

- **Quiz 1** (Aug 31st) -- This will cover the main points of the syllabus to ensure you've read this document and understand the parameters of the course. We will spend the first day of class going over this material, the lecture pdf is available on Concourse (as is this handout). Pay particular attention to the information in bold font. You will also be provided a form to list your final exam schedule and any conflicts with this class's posted final.
 - **Quiz 2** (Dec 7th) -- The second quiz will be on the last day of class and will address the course objectives. You will be asked to provide two examples from class that illustrate each objective (yes, I just gave you the quiz questions ;-)

CLASS PARTICIPATION

The exams (2 hourly & 1 comprehensive final will count for 20%, 20% and 25% (respectively) of your grade.

GRADES

Your grade will be composed of the following:

- In-class activities..... 25%
 - Bi-weekly article reviews (10 pts each + 1 pt extra)
 - Article presentations (5 pts each)
 - Movie Questions (10 pts each)
 - Quizzes (10 pts each)
- Exams 65%
 - Exams 1 & 2 (20% each)
 - Final (25%)
- Class Participation 10%

I use a standard distribution for all assignments and final grades:

A	92% or more	B-	80%-81.9%	D	60%-69.9%
A-	90%-91.9%	C+	78%-79.9%	F	59.9% or less
B+	88%-89.9%	C	72%-77.9%		
B	83%-87.9%	C-	70%-71.9%		

**** Remember: grades are not given by me, they are earned by you ****

OFFICE HOURS

To help you learn the material, all lectures are posted on Concourse prior to class or immediately following the lecture. In addition, I hold regular office hours twice a week and by appointment – so if something is unclear or if you would like to talk about a topic in more detail than we can cover in class, feel free to stop by my office. I have office hours in my lab (Reyneirs – which is admittedly a bit of a hike), as well as my office (Flanner).

While I will not play “Let’s Make a Deal” regarding grades, I am happy to clarify grading issues and/or explain an answer to a test question.



CLASS "RULES"

I will always be early to class so we can begin on time (and so you can ask questions before we begin). I expect that you will contribute to a respectful atmosphere for learning. This includes:

- **No newspapers, no outside reading during class**
- **No texting, no phone calls during class**
 - **Get out any food out BEFORE class begins**
 - **Get to class on time**
 - **Check Concourse to get class assignments** (readings, lectures and handouts)
 - **Complete readings BEFORE class begins**
 - **Type all assignments**
 - **Use common sense when emailing me**
 - **"Dr" or "Professor" Sheridan = OK: MRS ≠ OK ☺**



HONOR CODE & PLAGIARISM

Each of you has a copy of the Student Handbook, with a detailed description of the Honor Code. It can also be found at: <http://honorcode.nd.edu/docs/handbook.htm>. Indeed, you've all taken the pledge below. It will be enforced in this class.

"As a member of the Notre Dame Community, I will not participate in or tolerate academic dishonesty."

Regarding plagiarism, I have a zero tolerance policy. If you are caught doing it, you will get an F for the assignment. If it occurs a second time, I will convene an Honor Code Violation Committee.

The Golden Rule for Avoiding Plagiarism—Give Credit Where Credit is Due

http://wps.prenhall.com/hss_understand_plagiarism_1/0,6622,427073-,00.html

To avoid this problem, give credit to another's ideas or opinions; to facts, stats, images, etc; to spoken quotes from another person; and when you paraphrase another's ideas. If you are at all unclear on whether you are engaging in plagiarism, I suggest the following website:

<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>

MID-SEMESTER EVALUATION

Around Fall Break, I will give you a **take home course evaluation**. It includes a series of questions pertaining to class design, and is your chance to help effect changes if needed. As the semester progresses, take note of things that work particularly well (so I'm sure to repeat them!), as well as aspects of the class that need 'tweaking.' I give those suggestions careful consideration – and although I can not always implement them (for example, one year a student thought there was too much biology...in a biological anthropology course ;-)) – I often do make small changes that help enhance your learning experience.



COURSE CONTENT



INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY

Introduction: An overview of the course and discussion of the field of biological anthropology.

- Fuentes, A. 2010. The new biological anthropology: bringing Washburn's new physical anthropology into 2010 and beyond – the 2008 AAPA luncheon lecture. Yearbook of Physical Anthropology 143:2-12.

EVOLUTIONARY THEORY

History of Evolutionary Thought: A discussion of the development of evolutionary theory in Western science.

- Gould, S.J. 1993. Fall of the house of Ussher, in Eight Little Piggies: Reflections in Natural History, WW Norton & Co., p 181-193.
- Sabila, G. 2002. Greek astronomy and the Medieval Arabic tradition. American Scientist 90(4):1-6.

Darwinian Evolution and Natural Selection: An analysis of Darwin's theory, factors influencing its development, and Darwin's dilemma.

- Gould, S.J. 1977 Darwin's delay. In Ever since Darwin. WW Norton & Co, p. 21-27
- Gould, S.J. 2002 Linnaeus's luck? In I have Landed. Harmony books. p. 287-304.
- Armelagos, G. 2004. Evolutionists and creationists at the dinner table. Evolutionary anthropology 13:53-55

The Mechanisms of Evolution: A further discussion of Darwin's dilemma, synthesis of Darwin and Mendel's theories, and molecular genetics.

- Havilad, W. 2003. The study of humankind. In Human Evolution and Prehistory, Thomson Learning, p 74-81.
- Jurmain, R. 2003. Development of evolutionary theory. In Introduction to Physical Anthropology, 9th ed. Thomson learning, p 22-33.
- Quammen, D. 2004. Was Darwin wrong? No evidence for evolution is clear. Nat'l Geo, p 3-19.

For Fun: The Onion. 2006. Kansas outlaws the practice of evolution. <http://www.theonion.com/content/node/55807/print/>



ANTHROPOLOGICAL GENETICS



Basic Definitions: An overview of basic concepts/terms in anthropological genetics.

- Larsen, CS. 2011. Genetics: reproducing life and producing variation. In Essentials of physical anthropology: discovering our origins. New York: WW Norton & Co., pp 4-54.

Transcription & Translation – How does DNA replicate? How are proteins synthesized?

- Larsen, CS. 2011. Genetics: reproducing life and producing variation. In Essentials of physical anthropology: discovering our origins. New York: WW Norton & Co., pp 55-65.

PRIMATOLOGY

Characteristics of the Primates: Definition & evolution of the Order Primates.

- Napier JR, PH Napier. 1994. The biology and behavior of the living primates. In The Natural History of the Primates, MIT Press, p 246-267.

Survey of the Primates: A look at members of the Order Primates, including the Linnean classification for the Order.

- Reed KE, LR Bidner. 2004. Primate communities: past, present, and possible future. Yearbook of Physical Anthropology, 47:2-39.
- Jurmain R, L Kilgore, W Trevathan. 2007. Survey of the living primates. In Introduction to Physical Anthropology, Wadsworth Pub, p. 122-153.



OSTEOLOGY & DENTAL ANTHROPOLOGY

Primate Locomotion: Survey of morphology and locomotor patterns.

- Fleagle, JG. 1999. "Locomotor adaptations," in Primate adaptations and evolution, 2nd ed. San Diego: Academic Press, p 297-309.
- Napier, J. 2009. "The antiquity of human walking," in MK Sandford and EM Jackson, Classic and contemporary readings in physical anthropology, Belmont, CA: Wadsworth Engage Learning, p 97-104.



Bipedal Locomotion: Focus on the form of locomotion utilized by modern *Homo sapiens sapiens*, including a survey of the morphology, biomechanics, & stresses of bipedality.

- Olshansky SJ, BA Carnes, RN Butler. 2001. If humans were built to last. Scientific American 284(3). <http://web.ebscohost.com.lib-proxy.nd.edu/ehost/detail?vid=8&hid=12&sid=fd709e8e-e2d7-497e-9e8f-63d994c70ec4%40sessionmgr7>
- Chen I. 2006. Born to run. Discover. http://discovermagazine.com/2006/may/tramps-like-us/article_print
- Thorpe S, R Holder, R Crompton. 2007. Origin of human bipedalism as an adaptation for locomotion on flexible branches. Science 316: 1328-1331.

Diet and Dentition: Survey of tooth morphology and the role of the dentition in adaptation.

- Milton K. 2006. Diet and early primate evolution. Scientific American 16(2). <http://web.ebscohost.com.lib-proxy.nd.edu/ehost/detail?vid=10&hid=12&sid=fd709e8e-e2d7-497e-9e8f-63d994c70ec4%40sessionmgr7>

PRIMATE BEHAVIOR

Basics of Behavior Studies – models and techniques used in primate behavior studies will be reviewed.

Chimpanzee Behavior: Analysis of common and pygmy chimp social structure. Particular attention will be given to how these behaviors are used to in models of hominid evolution.

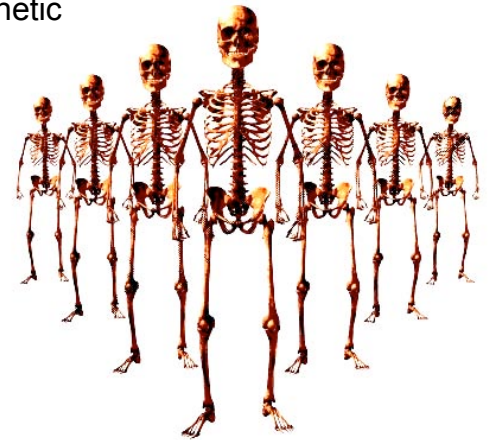
- Falk, D. 2000. Our cousins: the chimpanzees. In Primate Diversity. WW Norton & Co., p 318-339.
- Sapolsky, R. 2006. The 2% difference. Discover, 26:42-45.

PRIMATE BEHAVIOR (CONT.)

Scenario for Human Origins: Exploration of behavioral and phylogenetic attributes of our last common ancestor with the Great Apes.

- Simons EL. 1972. What made man? In Primate Evolution, Mac-Millian Co, p 275-282.
- Small MF. 2002. What's love got to do with it? In Physical Anthropology 02/03, 11th ed. McGraw-Hill, p 104-107.

For Fun: Clark-Glory, T. 2011. The science of the smooch. Salon.com, http://www.salon.com/mwt/feature/2011/01/18/kissing_qa



PRIMATE PALEONTOLOGY

Early Primate Evolution: Discussion of Paleocene, Eocene, and Oligocene primates.



- Hartwig, WC. 1999. Primate evolution. In The Nonhuman Primates, ed. by P Dolhinow and A Fuentes, Mayfield Publishing, p 10-17.
- Fuentes A. 2011. Early primate evolution. In Biological Anthropology: Concepts and Connections, 2nd ed., McGraw Hill, p. 160-186.

The Miocene Muddle: A discussion of Miocene apes and classification controversies.

- Cohen L, J Clark. 1999. Introduction. In Cryptozoology A to Z. New York: Fireside, p. 15-22.
- Begun, DR. 2003. Planet of the Apes, Scientific American; August: 74-84.



HUMAN PALEOANTHROPOLOGY

Plio-Pleistocene Hominids: Discussion of significant *Ardipithecus* and *Australopithecine* finds.

- Feder, J. 2011. African roots. In The past in perspective: an introduction to human prehistory. 5th ed. New York: Oxford University Press, pp 54-67.
- Gibbons, A. 2009. Our earliest ancestors: How did ape-like creatures evolve into members of the human family? Smithsonian, 40 (March):34-42.

Genus Homo: A survey of *Homo habilis* and *Homo erectus/ergaster* morphology and cultural remains of the first member of our genus.

- Lewin R. 1993. Hunter or scavenger? In Human Evolution 3rd ed. Blackwell Scientific Pubs p 135-140.
- Leonard WR. 2002. Food for thought. Scientific American, Dec: 106-115.
- Boaz NT, RL Ciochon. 2004. Headstrong hominids. Natural History 113:28-34
- Wrangham, R. 2011. The cook's body. In Annual Editions in Physical Anthropology 2011/12, ed. By E. Angeloni, pp 151-55.
- Dawkins, R. 2011. Missing persons? Missing no longer. In Annual Editions in Physical Anthropology 2011/12, ed. By E. Angeloni, pp 151-55.



HUMAN PALEOANTHROPOLOGY

Upper Paleolithic Hominids: Survey of the morphology and “culture” of archaic *Homo sapiens* and Neandertals.

- Shea JJ. 2003. Neandertals, competition, and the origins of modern human behavior in the Levant. Evolutionary Anthropology 12:173-187.
- Mellars P. 2004. Neandertals and the modern human colonization of Europe. Nature 432:461-465.
- Hall SS. 2008. The last of the Neandertals. National Geographic, October:34-59.
- Wong K. 2009. Twilight of the Neandertals. Scientific American, 301:32-37.



HUMAN BIOLOGY/ECOLOGY



Adaptation: exploration of the mechanisms that shape modern human variation such as diet, disease, and the environment.

- Molnar, S. 2002. The biological basis for human variation. In Human Variation: Races, Types, and Ethnic Groups, Upper Saddle River, NJ: Prentice Hall, pp. 34-87.

How Humans Vary: a discussion of modern human variation – survey of race, sex/gender, and intelligence.

- Bamshad, MJ, SE Olson. 2003. Does race exist? Scientific American, v 289, December.

‘Skeleton Action Figure’ Image Credits (in order of appearance)

Evolving primates: www.nciku.cn/theme/detail?catg1ID=12&catg2ID=119 (image #200009109-001)

Fighting Irish skeleton: used with permission from Lesley Gregoricka, MA (Ohio State University)

Hand holding mouse: www.evolutent.com/regular_mouse_in_skeleton.png>www.evolutent.com/regular_mouse_in_skeleton.png

Skull on books: www.awayfromthecrowd.com/html/reference/aftreference.html

Skeleton reading computer screen: SuperStock.com image #1296-102

Skeleton holding a sign: Dreamstime.com #124544

Skeleton holding edge of sign: Dreamstime.com #236367

Skeleton standing beside sign: Dreamstime.com #16678854

Skeleton student raising hand: AnimationFactory.com image #5060152

Skeleton leaning on hand: mafiawars.wikia.com/wiki/File:11954337581357827998skeleton_friend_afief_02.svg.med.png

Skeleton with clipboard: modified from www.fushigi.jp/images/boost1/skelet-tel.gif

AAPA logo: www.facebook.com/pages/American-Association-of-Physical-Anthropologists/48926179413

Chimp holding skull: www.talariaenterprises.com/images/3/5672b.jpg

Skull DNA: 4.bp.blogspot.com/_RI8-bHAhZHU/S27q7g15iZI/AAAAAAAAABc/cUPQQn5IGt0/s200/dna_skull.jpg

Gibbon skeleton: www.yorku.ca/kdenning/+2140%202005-6/2140-1Nov2005.htm

Walking skeleton: modified from Shutterstock image # 1021011

Human ‘crowd’: Cafepress.com image #26687176

Hand holding skull: Jupiterimages.com #23538050 (title 23538050)

Toumai skull: anthropology.net/2008/02/28/the-march-4th-issue-of-pnas-will-confirm-a-radiochronological-date-for-toumai/

Hand with match: istockphoto.com/Image#1412473 (title: need a light)

Neanderthal skull: www.google.com/imgres?q=neanderthal+skull&hl=en&client=firefox-a&rls=org.mozilla:en-US:official&biw=1080&bih=536&tbn=isch&tbnid=6jXtel5rWI4AqM:&imgrefurl=http://nevalalee.wordpress.com/2011/04/25/quote-of-the-day-113/neanderthal/&docid=p0PmgZI5EaDIGM&w=496&h=580&ei=aaNSTp3-Bebn0QH6gLn_BA&zoom=1&iact=hc&vpx=837&vpy=179&dur=2557&hovh=243&hovw=208&tx=142&ty=149&page=1&tbnh=117&tbnw=97&start=0&ndsp=12&ved=1t:429,r:5,s:0