IDS 2935: What Do Bones Tell Us?
Quest 2

I. General Information

Class Meetings

- Spring 2021
- MWF 4
- TBA

Instructor

- John Krigbaum, krigbaum@ufl.edu
- 1350A Turlington Hall
- Office Hours: TBD

Course Description

What Do Bones Tell Us? focuses on the human skeleton and its transformation over time. The course will review basic terms and concepts in human anatomy, embryology, and physiology, and introduce students to fundamentals in evolutionary biology, vertebrate paleontology, biological anthropology, and bioarchaeology. As a general education biological science course ('B'), What Do Bones Tell Us? focuses on the biological and biocultural history of the human skeleton. Students will learn how diverse areas of science contribute to what we know about the human skeleton, and students will consider how we as a society benefit from that detailed knowledge. The course explores biocultural facets of modern human biology and behavior, and the myriad types of information gleaned from skeletal tissue to understand (and appreciate) the human condition, past and present. Course content and delivery will permit students to ask big questions such as who are we and where do we come from?

What Do Bones Tell Us? provides students the opportunity to develop an appreciation of the comparative method used routinely in the life sciences and to explore the role of homology in vertebrate evolution through an appreciation of their own human skeleton. Through active learning activities and group projects, students will develop critical skills in the analysis and interpretation of qualitative and quantitative data to understand animal diversity. It introduces fundamentals about vertebrate and human evolution and reinforces how scientific inquiry contributes substantively to increased knowledge about our world, and its maintenance. How does knowledge of vertebrate biodiversity contribute to what we know about our skeletons and ourselves? How does an evolutionary perspective of human evolution contribute to who we are today and how might society benefit from that knowledge?

What Do Bones Tell Us? weaves lecture and discussion in each 50-minute class session (MWF 50-minute preferred format). Lectures on Mondays and Wednesdays focus on key content and concepts. Friday class meetings led by the Instructor focus on group activities and discussion of assigned readings/videos (which should be read/viewed prior to class).

What Do Bones Tell Us? provides students basics in the biological sciences to contemplate their bodies and their place in nature. Students will be encouraged to have the autonomy to reflect on the spatial and temporal scales of the human skeleton and to appreciate its form and function. Through individual and group activities and discussion, the course provides students the opportunity for individual and group reflection and constructive thinking about how interdisciplinary inquiry works, and how to apply creatively new lines of inquiry to their own areas of interest at the University of Florida (and beyond).

Quest and General Education Credit

- Quest 2
- Biological Sciences

This course accomplishes the Quest and General Education objectives of the subject areas listed above. A minimum grade of C is required for Quest and General Education credit. Courses intended to satisfy Quest and General Education requirements cannot be taken S-U.

Required Readings and Works

Required:
Wood, Bernard (2005) *Human Evolution: A Very Short Introduction*, 1st edition. Oxford: Oxford University Press. (131 pp.)
Switek, Brian (2019) *Skeleton Keys: The Secret Life of Bone.* New York: Riverhead Books. (276 pp.)

Recommended:
Bahn, Paul (2003) *Written in Bones: How Human Remains Unlock the Secrets of the Dead.* Buffalo, NY: Firefly Books. (192 pp.)
Shubin, Neil (2009) *Your Inner Fish: A Journey into the 3.5-Billion-Year History of the Human Body*. New York: Vintage. (256 pp.)

Materials and Supplies Fees: n/a

II. Graded Work

Description of Graded Work

Assignment	Description	Requirements	Points
In Class Group Activity	Students will work in teams of 2-3 and review primary literature on a spectacular find, and present to class (most Fridays, N=10 will be graded)	In class participation	100
Homework	Students will be assigned 10 homework exercises based on discoveries of remarkable skeletal remains and the primary literature and data associated with their publication and analysis (cf. 'supplementary materials' include comprehensive data in various formats). These materials tend to be 'all access' and are readily available to UF students.	Written work submitted	200
Exam 1	In class exam based on material covered in the first half of class.	Written exam	250
Exam 2	In class exam based on material covered in the second half of class.	Written exam	250
Final Paper	Final analytical essay (~6-8 double-spaced pages, not including references) focused on subject of interest to student that requires the comparison and self-reflection of the human skeleton and its form, function, and adaptation to life as a student in college. As the course progresses, students will be 'coached' on their paper topic and encouraged to find a comparative taxon to use as a reference to their own human skeleton. Each week, as we approach spectacular finds in the natural history of the vertebrates, we will highlight how the findings that week compare with our own skeletons and their structure/function. Through the use of concrete examples, students will be reinforced on the comparative approach 'in action'. By Week 10 (after Spring Break), students will be required to upload a one page topic and broad outline of their comparative paper and list key references. Students will receive feedback so that they can move forward in drafting their final paper due Week 15 (April 21, 2021).	Written work	200

Grading Scale

For information on how UF assigns grade points, visit: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

A	94 – 100%		C	74 – 76%
A-	90 – 93%		C-	70 – 73%
B+	87 – 89%		D+	67 – 69%
B	84 – 86%		D	64 – 66%
B-	80 – 83%		D-	60 – 63%
C+	77 – 79%		E	<60

Grading Rubric(s)

Participation Grading Rubric (N=10 Fridays during the semester—100 points total. 0 points per student, per missed class group activity):

	High Quality	Average	Needs Improvement
Informed: Shows evidence of having done the assigned work with constructive input.	**4 points.** Student fully informed and prepared for class group activity.	**2-3 points.** Student moderately prepared for class group activity.	**1-2 point(s).** Student unprepared or minimally prepared for class activity.
Thoughtful: Shows evidence of having understood and considered issues raised.	**3 points.** Student considers myriad aspects of class group activity.	**2 points.** Student considers only nominal aspects of class group activity.	**1 point.** Student not engaged in subject being discussed for class group activity
Considerate: Takes the perspective of others into account.	**3 points.** Student works well within assigned class group.	**2 points.** Student less considerate of others in assigned class group.	**1 point.** Student not considerate of others in assigned class group.

Although this course does not meet WR requirements, there will be a final paper, and the following rubric will be used:

	SATISFACTORY (Y)	UNSATISFACTORY (N)
Content	Assignments exhibit evidence of ideas that respond to the topic with complexity, critically evaluating and synthesizing sources, and provide an adequate discussion with basic understanding of credible sources.	Assignments either include a central idea(s) that is unclear or off- topic or provide only minimal or inadequate discussion of ideas. Papers may also lack sufficient or appropriate sources.

Organization & Coherence	Assignments exhibit an identifiable structure for topics, including a clear thesis statement, and follow a logical progression of ideas.	Documents and paragraphs lack clearly identifiable organization, may lack any coherent sense of logic in associating and organizing ideas, and may also lack transitions and coherence to guide the reader.
Argument & Support	Assignments use persuasive and confident presentation of ideas, strongly supported with evidence.	Documents make only weak generalizations, providing little or no support, as in summaries or narratives that fail to provide critical analysis.
Style	Assignments use a writing style with word choice appropriate to the context, genre, and discipline. Sentences should display complexity and logical sentence structure.	Documents rely on word usage that is inappropriate for the context, genre, or discipline. Sentences may be overly long or short with awkward construction. Documents may also use words incorrectly.
Mechanics	Assignments will feature correct or error-free presentation of ideas. At the weak end of the Satisfactory range, papers may contain a few spelling, punctuation, or grammatical errors that remain unobtrusive so they do not muddy the paper's argument or points, but note for the purposes of your grade that I expect you to write professionally and I take points off for basic errors like these. I will evaluate and provide feedback on all written assignments with respect to grammar, punctuation, clarity, coherence, and organization.	Papers contain so many mechanical or grammatical errors that they impede the reader's understanding or severely undermine the writer's credibility.

III. Annotated Weekly Schedule

Week/ Date	Activity	Topic/Assignment (Question/Subject)	Assigned Work Due
I. Natural History of the Primate Skeleton			
Week 1	Topic	Introduction	
	Summary	Introduction to the study of bone. First week overview of course will highlight myriad fields of inquiry that rely on analysis of bone/bone	

		tissue. Central themes introduced include bone histology, bone chemistry, and growth and development.	
	Readings/Works	Brown, Peter (no date) The Human Skeleton. A useful, albeit detailed, resource for this course: http://www.peterbrown-palaeoanthropology.net/skeleton.pdf Switek (2019:1-32)	
	Assignment	Review online resources available for this course, including introductory video for http://www.becominghuman.org/node/interactive-documentary.	N/A
Week 2	Topic	Evolution	
*No class on Monday, Jan 18th (MLK Jr.)	Summary	Basic principles of evolutionary biology are introduced, specifically focused on the analysis of the vertebrate skeleton, and the definition of species and geological context. Key concepts introduced include homology, ontogeny, allometry, and life history.	
	Readings/Works	Wood (2005:1-23) Switek (2019:35-62) Zimmer, Carl (2008) What is a species. *Scientific American* (June) 298(6):72-79. **Additional Reading** Carroll, Sean B., Prud'homme, Benjamin, and Gompel, Nicholas (2008) Regulating evolution. *Scientific American* (May) 298(5):60-67.	
	Assignment	The human skeleton worksheet: http://www.oum.ox.ac.uk/educate/resource/human2.pdf *Field Trip 1.* Museum Visit 1. On your own (and if you are able) visit the Florida Museum of Natural History permanent exhibit: Florida Fossils: Evolution of Life and Land. Become familiar with the fossil hall and its displays, as you will have the opportunity in this class to revisit and build on this exhibit focused on key taxa of your choice. Homework #1. Virtually, visit the website homepage of http://www.eskeletons.org/. Compare your skeleton with other primate species. Identify 1 (or two) key bones in the following regions of	Upload Homework #1 on Monday, Jan. 11th

		your skeleton (skull, shoulder, arm, hand, forearm, spine, pelvis, thigh, leg, foot). Group exercise (on your own time) www.eskeletons.org life size printout (exercise).	
Week 3	Topic	Tetrapoda	
	Summary	Review of amphibians, reptiles, and mammals and the skeletal evidence for the transition to land. Highlight key structural changes in the skull (jaws, teeth, and ears) and the development of four limbs.	
	Readings/Works	Switek (2019:65-88) Clack, Jennifer A. (2005) Getting a leg up on land. *Scientific American* (December) 293(6):100-107. Dalton, Rex (2006) The fish that crawled out of the water. *Nature* doi:10.1038/news060403-7. Daeschler, Edward B., Shubin, Neil H., and Jenkins Jr., Farish A. (2006) A Devonian tetrapod-like fish and the evolution of the tetrapod body plan. *Nature* 440:757-763. https://doi.org/10.1038/nature04639 Resources: Nair, Prashant (2014) QnAs with Neil Shubin. *PNAS* 111(3):881-882. https://doi.org/10.1073/pnas.1321499110 Website: https://tiktaalik.uchicago.edu/ **Additional Reading** Shubin, Neil H., Doeschler, Edward B., and Jenkins Jr., Farish A. (2014) Pelvic girdle and fin of *Tiktaalik roseae*. *PNAS* 111(3):893-899. Stewart, Thomas A. et al. (2020) Fin ray patterns at the fin-to-limb transition. *PNAS* 117(3):1612-1620. https://doi.org/10.1073/pnas.1915983117 Schweitzer, Mary H. (2010) Blood from stone. *Scientific American* (December) 303(6):62-69.	

	Assignment	Group Activity: How do basic mammalian teeth work? (Jim Mellet's tribosphenic tooth cut-outs) Faculty Spotlight: Dr. Michael Granatosky (UF Alum –BA Anthropology, 2011) https://www.nyit.edu/bio/michael.granatosky	N/A
Week 4	Topic	Mammalia	
	Summary	Review of the modern mammals and their radiation. We will highlight key differences in mammal-like reptiles the mammal skeleton compared to birds/reptiles. Discussion of as well as origin and early diversification of placental mammals.	
	Readings/Works	Brusatte, Stephen and Luo, Zhe-Xi (2016) A Scent of the Mammals. *Scientific American* (June) 314(6):28-35. Pennisi, Elizabeth (2019) How life blossomed after the dinosaurs died. *Science* 366:409. DOI: 10.1126/science.366.6464.409. Lyson, T.R. et al. (2019) Exceptional continental record of biotic recovery after the Cretaceous-Paleogene mass extinction. *Science* 366:977-983. DOI: 10.1126/science.aay2268	
	Assignment	Video (Before Friday's class): NOVA: Rise of the Mammals: https://www.pbs.org/wgbh/nova/video/rise-of-the-mammals/ Extreme Mammals website: https://www.amnh.org/exhibitions/extreme-mammals/what-is-a-mammal Faculty Spotlight: Stephen Chester (UF Alum – BS Marketing, BA Anthropology, 2005) http://www.brooklyn.cuny.edu/web/academics/schools/naturalsciences/undergraduate/anthropology/faculty/faculty_details.php?faculty=1170 ; http://stephenchesterpaleontology.com/index.php/stephen-chester-bio/ Group Activity, Part 1. Using Extreme Mammals website, review 'extreme bodies' section and discuss different animal 'gear' and compare your own bodies to these extreme examples. Part 2. Use Animal Diversity website (https://animaldiversity.org/) and Tree	Upload Homework #2 on Monday, Jan. 25th

		of Life website (http://tolweb.org/tree/) conduct research on what is known about mammals before and after the K-Pg boundary … each group will provide lightning presentation in class on a pre-assigned Order of mammals.	
Week 5	Topic	Primates	
	Summary	Introduction to the primates and their skeleton, focusing on monkeys and apes. Review key differences between primates and non-primate mammals. Discuss changes in teeth and changes in tooth morphology.	
	Readings/Works	Switek (2019:91-110) Walton, Rebecca (2009) Introducing *Darwinius masillae*. EveryONE PLoS One Blog. https://blogs.plos.org/everyone/2009/05/19/plos-one-introduces-darwinius-masillae/ Franzen, Jens L. et al. (2009) Complete primate skeleton from the Middle Eocene of Messel in Germany: Morphology and Paleobiology. *PLOS ONE* 4(5): e5723. doi: 10.1371/journal.pone.0005723 **Additional Reading** Seiffert, Erik R. et al. (2009) Convergent evolution of anthropoid-like adaptations in Eocene adapiform primates. *Nature* 461:1118-1121. https://doi.org/10.1038/nature08429 Franzen, Jens L. et al. (2009) Correction: Complete Primate Skeleton from the Middle Eocene of Messel in Germany: Morphology and Paleobiology. *PLOS ONE* 4(7): 10.1371/annotation/137a79c7-5807-47fc-b885-1f5cc2493305. https://doi.org/10.1371/annotation/137a79c7-5807-47fc-b885-1f5cc2493305 Franzen, Jens L. et al. (2009) Correction: Complete Primate Skeleton from the Middle Eocene of Messel in Germany: Morphology and Paleobiology. *PLOS*	

		ONE 4(7): 10.1371/annotation/18555b51-1fd1-47b6-a362-acaaa24a53da. https://doi.org/10.1371/annotation/18555b51-1fd1-47b6-a362-acaaa24a53da Resources: Extreme Mammals: *Darwinius masillae.* (AMNH) https://www.amnh.org/exhibitions/extreme-mammals/meet-your-relatives/darwinius-masillae (Extreme Mammals website: https://www.amnh.org/exhibitions/extreme-mammals) Spotlight: Doug Boyer (Duke University): http://www.dougmboyer.com/	
	Assignment	*Field Trip 2.* Museum Visit 2. Formal tour of the Florida Museum of Natural History permanent exhibit by a Curator of Vertebrate Paleontology: Florida Fossils: Evolution of Life and Land. What is 'extreme' about *Darwinius masillae*? What are the details of this discovery in terms of teamwork involved to produce the report? What about the 'spin' involved in spreading the news.	Upload Homework #3 on Monday, Feb. 1st
II. Natural History of the Human Skeleton			
Week 6	Topic	Bipedalism	
	Summary	Key aspects of the hominoid (ape) skeleton are reviewed and the fossil evidence of early the first upright walkers is introduced. Skeletal highlights focus on the analysis of weight-bearing joints and limbs and determining how an animal moves on two legs as opposed to walks on all fours.	
	Readings/Works	Wood (2005:24-83) Switek (2019:113-131) Harmon, Katherine (2013) Shattered ancestry. *Scientific American* (February) 308(2):42-49. Shreeve, Jamie. 2010. The Evolutionary Road. *National Geographic* July 2010 pp. 34-67. **Additional Reading**	

		White, Tim D. et al. (2015) Neither chimpanzee nor human, *Ardipithecus* reveals the surprising ancestry of both. *PNAS* 112(16):4877-4884. doi.org/10.1073/pnas.1403659111 Resources: Hogenboom, Melissa (2014) The 'Lucy' fossil rewrote the story of humanity. BBC Earth link: http://www.bbc.com/earth/story/20141127-lucy-fossil-revealed-our-origins PODCAST: (BBC Inside Science podcast – fast forward to 19:45)	
	Assignment	Identify the key bipedal traits in your own skeleton, and produce a 'lab report' that indicates key features of upright walking and the transformation of the skeleton from a quadruped to a biped. Students will evaluate hypotheses and data provided that contribute to our knowledge of diversity of bipedal locomotion and what evidence is brought to bear to support these changing perspectives.	Upload Homework #4 on Monday, Feb. 8th
Week 7	Topic	Jaws & Teeth	
	Summary	Aspects of the jaws and teeth are introduced with respect to identifying different species in the fossil record. Skeletal highlights focus on analysis of functional morphology and biomechanics using living (extant) and extinct forms to interpret differences in the identification species, and diet.	
	Readings/Works	Switek (2019:133-151) Wood (2005:71-83) Wong, Kate (2016) Mystery Human. *Scientific American* (March) 314(3):28-37. Early *Homo* (read articles in order listed, ca. 8 pp.). Sugden, Andrew M. (2015) Finding *Homo* nearly 3 million years ago. *Science* 347:1325. DOI: 10.1126/science.347.6228.1325-g Gibbons, Ann (2015) Deep roots for the genus *Homo*. *Science* 347:1056-1057. DOI: 10.1126/science.347.6226.1056-b Villmoare, Brian et al. (2015) Early *Homo* at 2.8 Ma from Ledi-Geraru, Afar,	

		Ethiopia. *Science* 347:1352-1355. DOI: 10.1126/science.aaa1343 **Additional Reading** Dimaggio, Erin N. et al. (2015) Late Pliocene fossiliferous sedimentary record and the environmental context of early *Homo* from Afar, Ethiopia. *Science* 347:1355-1359. DOI: 10.1126/science.aaa1415 Hawks, John, de Ruiter, Darryl J., and Berger, Lee R. (2015) Comment on "Early *Homo* at 2.8 Ma from Ledi-Geraru, Afar, Ethiopia" *Science* 348:1326. DOI: 10.1126/science.aab0591 Villmoare et al. (2015) Response to Comment on "Early *Homo* at 2.8 Ma from Ledi-Geraru, Afar, Ethiopia". *Science* 348:1326. DOI: 10.1126/science.aab1122	
	Assignment	Under the 'Species' category, explore skeletal evidence at humanorgins.si.edu for *Homo habilis* and *Homo rudolfensis*. Types of questions will include: What are some of the iconic fossils for these two groups, and how do they differ from one another. Instructor will provide metric data on cheek tooth size and isotopic data from tooth enamel for students to analyze in MS Excel to contextualize differences between the two taxa. Students will formulate hypotheses and test the outcomes given different parameters of the data.	Upload Homework #5 on Monday, Feb. 15th
Week 8	Topic	Brains & Guts	
	Summary	Early human changes in stature and limb proportion are explored with respect to evidence in the fossil record for encephalization (brain size increase) and changes towards 'habitual' walking and running (on two legs). Skeletal highlights focus on the 'expensive tissue hypothesis'.	
	Readings/Works	Wood (2005:84-99) Aiello, Leslie C. and Wheeler, Peter (1995) The expensive-tissue hypothesis. *Current Anthropology* 36(2):199-221. doi:10.1086/204350.	

		Brown, Frank et al. (1985) Early *Homo erectus* skeleton from west Lake Turkana, Kenya. *Nature* 316:788-792. Caspari, Rachel (2011) The evolution of grandparents. *Scientific American* (August) 305(2):44-49. Resources: https://www.britannica.com/place/Nariokotome http://humanorigins.si.edu/evidence/human-fossils/fossils/knm-wt-15000	
	Assignment	N/A	Upload Final Paper Topic and Outline, Wednesday, Mar. 10th
Week 9	Topic	Diet & Climate	
	Summary	Early humans adapted to diverse diets and there are novel approaches to interpreting what they ate using tools of bone chemistry. Skeletal highlights focus on differences in tooth (molar) microwear and how we interpret diets (and climates) in the distant past.	
	Readings/Works	Switek (2019:153-173 Wood (2005:100-115) Leonard, William R. (2002) Food for thought. *Scientific American* (December) 287(6):106-115.	
	Assignment	N/A	
Week 10	Topic	On the move	
	Summary	Modern humans ventured across the Old World and left their mark in a variety of ways, including in the genes of present-day people and the fossilized remains of modern (and extinct) humans. Skeletal highlights focus on ancient DNA and the preservation of bone.	
	Readings/Works	Switek (2019:175-196) Marean, Curtis W. (2015) The Most Invasive Species of All. *Scientific American* (August) 313(2):32-39. Hammer, Michael F. (2013) Human hybrids. *Scientific American* (May) 308(5):66-71. Hofman, Courtney A. and Warinner, Christina (2019) Ancient DNA 101. *The Archaeological Record* 19(1):18-25.	

		Wong, Kate (2009) Rethinking the Hobbits of Indonesia. *Scientific American* (November) 301(5):66-73. Neanderthals **Additional Reading** Price, Michael (2020) Africans, too, carry Neanderthal genetic legacy. *Science* 367:497. DOI: 10.1126/science.367.6477.497 Stewart, J.R. and Stringer, C.B. (2012) Human Evolution Out of Africa: The Role of Refugia and Climate Change. *Science* 335:1317-1321. http://humanorigins.si.edu/evidence/human-fossils/shanidar-3-neanderthal-skeleton	
	Assignment	Review the different types of genetic data used by archaeologists to learn about past lifeways. Compare the nature of these different datasets and how to they confirm what we know and raise questions that we don't yet know (or have the tools just yet to address the question(s)).	Upload Homework #6 on Monday, Mar. 15th
III. Biocultural History of Humankind			
Week 11	Topic	The Biological Profile	
	Summary	Modern humans are a diverse lot and their skeletons too are diverse. In this week, we explore the basic concepts of aging and sexing the human skeleton and interpreting how their stature (how tall they were) and their ancestry, when possible. Skeletal highlights focus on clinal effects (related to latitudinal differences) on size and shape of the human skeleton and limb proportions.	
	Readings/Works		
	Assignment	What does it mean to be a *modern* human? Students will critically explore the history of scientific racism and past attempts to partition by biological/sociocultural 'race'. Faculty Spotlight: Dr. Cris Erin Hughes (UF Alum – BA Anthropology, 2004). Assistant Clinical Professor, Anthropology, University of Illinois, Urbana-Champaign. https://anthro.illinois.edu/directory/profile/hughesc	Upload Homework #7 on Monday, Mar. 22nd

Week 12	Topic	Human Diversity	
	Summary	Diversity of humankind is explored through both skeletal remains and preserved DNA in ancient skeletal material. Skeletal highlights focus on human diversity and adaptations observed in the bioarchaeological record.	
	Readings/Works	Switek (2019:199-223) Bamshad, Michael J. and Olson, Steve E. (2003) Does race exist? *Scientific American* (December) 289(6):78-85. Jablonski, Nina G. (2010) The naked truth. *Scientific American* (February) 302(2):42-49. Pringle, Heather (2011) The First Americans. *Scientific American* (November) 305(5):36-41.	
	Assignment	'One Species Living Worldwide' http://humanorigins.si.edu/evidence/genetics/one-species-living-worldwide	Upload Homework #8 on Monday, Mar. 29th
Week 13	Topic	Health & Well-Being	
	Summary	In bioarchaeology, one fascinating field that is informed by biomedicine is that of paleopathology. We will review skeletal evidence associated with the archaeological record that highlights patterns of human adaptation in diverse contexts. Skeletal highlights focus on indirect evidence of health from the oral microbiome in (and on) your teeth (in the form of mineralized plaque).	
	Readings/Works	Ackerman, Jennifer (2012) The ultimate social network. *Scientific American* (June) 306(6):36-43. **Additional Reading** Larsen, Clark Spencer (2018) The Bioarchaeology of Health Crisis: Infectious Disease in the Past. *Annual Review of Anthropology* 47:295-313. https://doi.org/10.1146/annurev-anthro-102116-041441	
	Assignment	Microbiome assignment. Although technically not our skeleton, we can learn a lot from the microbiome of preserved tissues recovered from archaeological (and fossil) human remains,	Upload Homework #9 on Monday, Apr. 5th

		particularly dental calculus. Identify one peer-reviewed article and present a one-page annotated bibliography of this work, and situate the findings of the research with what we have covered in this class to date. What hypotheses are addressed in the work and how do the authors utilize microbiome data to address their hypothesis?	
Week 14	Topic	Mortuary Behavior	
	Summary	The disposal of the dead is a ghastly enterprise. Here we explore diverse approaches to how people celebrate the lives of their once-living members through the thoughtful act of burial. Skeletal highlights focus on traumatic injuries and how we interpret 'cause of death' in the prehistoric record.	
	Readings/Works	Switek (2019: 225-243) read articles in order listed (ca. 20 pp.): Armelagos, George J. (2013) Reading the bones. *Science* 342:1291. DOI: 10.1126/science.1249076 Gibbons, Ann (2013) The Thousand-Year Graveyard. Science. *Science* 342:1306-1310. DOI: 10.1126/science.342.6164.1306 required multimedia: https://spark.sciencemag.org/the-thousand-year-graveyard/ Beets, Robert (2014) Science's 'The Thousand-Year Graveyard' Earns Archaeology Writing Award. https://www.aaas.org/news/sciences-thousand-year-graveyard-earns-archaeology-writing-award Faculty Spotlight: (UF Alum BS Zoology and BA Anthropology, 2005) Dr. Heather Garvin, PhD, D-ABFA (Des Moines University). https://www.dmu.edu/directory/heather-garvin-elling/ Also, check out: HD Forensics. https://www.hdforensics.com/hdforensic	
	Assignment	'Fossil Forensics' http://humanorigins.si.edu/research/fossil-forensics-interactive	Upload Homework #10 on Monday, Apr. 12th

		Track down using internet resources a study of a known individual and the analysis of their post-mortem remains. This week, for example, we have looked at Richard III's remains. One page with references and one 'sourced' image.	
Week 15	Topic	Identity	
	Summary	Social bioarchaeology connects important cultural components of what we know (or think we know) about purposeful burials in archaeological context. Skeletal highlights include the review of case studies of celebrated burials that highlight key differences and similarities of people across space and time.	
	Readings/Works	*Pronounced 'chat-al-hue-uck'* Hodder, Ian (2004) Women and Men at Çatalhöyük. *Scientific American* (January) 290(1):76-83. Milner, George R. (2019) Early agriculture's toll on human health. PNAS 116:13721-13723. https://doi.org/10.1073/pnas.1908960116 Larsen, Clark Spencer et al. (2019) Bioarchaeology of Neolithic Çatalhöyük reveals fundamental transitions in health, mobility, and lifestyle in early farmers. *PNAS* 116:12615-12623. https://doi.org/10.1073/pnas.1904345116 Bioarchaeology Spotlight: Clark Spencer Larsen (The Ohio State University): website: https://anthropology.osu.edu/research/laboratories/brl	
	Assignment	*In the last week of class, each student will share with their classmates a 'lightning presentation' with three Powerpoint slides in three minutes, highlighting their research findings and self-reflection of their own vertebrate skeleton.*	Upload Final Paper Wednesday, Apr. 21st
	Final		

IV. Student Learning Outcomes (SLOs)

At the end of this course, students will be expected to have achieved the Quest and General Education learning outcomes as follows:

Content*: Students demonstrate competence in the terminology, concepts, theories, and methodologies used within the discipline(s)*.

- Identify, describe, and explain biological aspects of the human skeleton that reflect their vertebrate, mammalian, and primate heritage, and modern human biocultural adaptations (**B**). **Assessments**: Homework assignments, exams, lightning presentation, final paper.
- Identify, describe, and explain the role of homology in comparative anatomy and how it aids in an understanding of the human skeletal system, and how evolutionary and cultural factors have helped shape the skeleton (**Quest 2, B**). **Assessments**: Homework assignments, exams, lightning presentation, and a final paper.

Critical Thinking: *Students carefully and logically analyze information from multiple perspectives and develop reasoned solutions to problems within the discipline(s).*

- Critically analyze and evaluate qualitative and quantitative data derived from fossil (and modern) skeletal material to draw conclusions and test hypotheses about the history of life and the human condition (**Quest 2, B**). **Assessments**: Homework assignments, exams, lightning presentation, and a final paper.
- Critically evaluate and assess the contribution of the analysis of the human skeleton and its biology and development, with respect to what is known (not known, and unknowable) in the history of life (**Quest 2, B**). **Assessments**: Homework assignments, exams, lightning presentation, and a final paper.

Communication: *Students communicate knowledge, ideas and reasoning clearly and effectively in written and oral forms appropriate to the discipline(s).*

- Develop and present in writing the analysis of qualitative and quantitative data, and logic to draw reasonable conclusions based on their analysis on a specific problem (**Quest 2, B**). Assessments: Homework assignments, lightning presentation, and final paper.

Connection: *Students connect course content with meaningful critical reflection on their intellectual, personal, and professional development at UF and beyond.*

- Analyze and compare their human skeleton to address key changes in the vertebrate skeleton and accommodations that may occur due to biocultural adaptations and insults (**Quest 2**). **Assessments**: Lightning presentation, and final paper.

V. Quest Learning Experiences

1. Details of Experiential Learning Component

This course integrates the Florida Museum of Natural History permanent exhibit: Florida Fossils: Evolution of Life and Land into a broader understanding of the comparative method and its use in the natural anatomical sciences. Students are encouraged to visit the museum at least three times during the semester, and there will be one scheduled (and recorded) tour of the Hall (after all students have familiarized themselves with the exhibit) by an FLMNH Curator of Vertebrate Paleontology.

2. Details of Self-Reflection Component

This course requires students to explore their internal skeletons and compare their skeletons with a variety of different living and extinct taxa. Each week, group-led discussions on a renowned discovery help to reinforce student's place in nature, as will their submitted assignments. A final essay paper forces students to self-reflect and consider the comparative structure and function of their vertebrate skeleton at this important developmental stage in their life course.

VI. Required Policies

Attendance Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Students Requiring Accommodation

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

UF Evaluations Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc/Default.aspx , 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

The Writing Studio

The writing studio is committed to helping University of Florida students meet their academic and professional goals by becoming better writers. Visit the writing studio online at http://writing.ufl.edu/writing-studio/ or in 2215 Turlington Hall for one-on-one consultations and workshops.