



**Department of Anthropology
Biology of Human Variation
ANTH-2110
Fall 2018**

CONTACT INFORMATION

**Instructor: Dr. Katie Whitaker
Email: kwhitake@lakeheadu.ca
Office Location: Sessional Desk Area
Office Hours: Tues 1:00 – 2:00**

DELIVERY MODE/LOCATION

**Course Location: OA2008
Campus: Orillia
Times: W/F 11:30AM-1:00PM**

COURSE DESCRIPTION

This course focuses on human microevolution. Topics include evolutionary theory, the genetic background of human variation, human adaptability and the role of disease in human evolution.

COURSE OBJECTIVES

Be able to analyse and evaluate scholarly work.
Have a solid understanding of basic evolutionary principles.
Be able to identify the fundamental traits that make us all “human”.

LEARNING OUTCOMES

To recognize and analyse evidence and processes in human biological and social development.
To think and write critically.
To increase and expand your interest in archaeology and paleoanthropology.

REQUIRED MATERIALS

The assigned readings will be journal articles, you are expected to read these **BEFORE** the class in which they are assigned. These can be found in the appropriate folder on MyCourseLink. We

may not always discuss these specifically; however feel free to ask questions if anything is unclear.

ASSESSMENTS

<u>Assessment</u>	<u>Grade Percentage</u>	<u>Due Date</u>
Scavenger Hunt	2% BONUS	11:30PM September 12
Attendance/Participation	10%	N/A
Reading/Discussion Group	15%	Various dates
Article Summaries	10%	October 3
Midterm	15%	October 19
Labs	10% each, 30% total	Sept 19; Nov 7; Nov 28
Pub Quiz	5%	November 23
Final Exam	20%	Exam Period December 6 th -16 th

COURSE SCAVENGER HUNT 2% BONUS

On the course website you will find a quiz which is focussed on being aware and understanding the content of the course. The aim is to make sure you are familiar with the course rules with respect to expectations as well as the various documents found in the Content section. You will have up to 10 attempts to get 100% on the quiz, but it must be completed by 11:30pm on September 12. If you achieve 100% you will receive a 2% bump to your final mark.

ATTENDANCE AND PARTICIPATION 10%

Attendance will be taken every class, considering that **lecture slides and notes will NOT be posted**, you are encouraged to attend and participate in order to get full marks. Attendance will be taken every class for 5% of your final mark. Marks will be based on the following criteria: attending 90% or more classes receive 5%, attending 70-89% of classes receive 3%, attend 50-69% of classes receive 1.5%, attend less than 50% and you will receive no credit. Participation will be based on your daily involvement in discussions, including submitting a question for every

Reading Presentation you are not leading, and throughout lectures by asking and answering questions and will account for the other 5%.

READING PRESENTATION AND DISCUSSION 15%

Each group of 3 (three) students will pick from the classes marked with an asterix (*) and present the readings to the class and lead a discussion. The presentation must include a PowerPoint and should take about 5 (five) minutes to set the scene and provide a summary of the articles under review. Be sure to provide a complete reference for each article as well as any relevant images to better explain the articles. Afterwards the group will lead a 15 (fifteen) minute discussion. This will include creating a series of leading questions (questions that cannot be answered with simple yes or no responses) that will be submitted to me on the Monday before the class, and encouraging the whole group to participate. If this is not your week to present, you must come prepared with a written question for the group that you will turn in after the presentation. These questions will help go towards your participation mark. The night before your presentation, each group member will E-mail me a brief note about how they contributed to the group. Unless there are huge disparities in workload and effort, group members will receive the same mark.

ARTICLE SUMMARIES 10%

Choose any 2 (two) articles with a # and write a single page summary for each. Be sure to include the full reference for each article in a separately-paged Reference List and create a single overall title page. For each summary state the thesis/research question and provide an overview of the content of each article. You must reference throughout, and if using specific information or quotes you must include a specific page number in your reference. The summaries are due together, as a package, in class, by 1:00pm on October 3.

MIDTERM 15%

The midterm will cover everything from September 5 to October 17 including lectures and all readings. The format will be discussed and reviewed on October 17.

LABS 3 X 10%, 30% TOTAL

Lab assignments will be made available on MyCourseLink. You are expected to print them off, complete any readings before the lab and finish any required questions before the lab. During the lab you will cover the remainder of the exercises and will submit your complete assignment at the end of each lab. You will not have a chance to catch-up on missed labs unless there are documented, extenuating circumstances (in which case a make-up writing assignment will be given in lieu of the lab), otherwise you will forfeit the 10% if you chose not to show up.

PUB QUIZ 5%

On November 23, in small groups, the class will do a pub quiz. It will cover the entire course, with the aim being to both demonstrate your knowledge and review for the final. Questions will be asked orally and each group will submit a list of answers. To prepare simply review as you would

for your final. You will be relying on yourselves and your group members for the answers as it will be closed-book. There are no make-ups.

FINAL 20%

This exam, though based on the entire course, will not simply be a recitation of course content. The bulk of the exam will be short essay questions that require you to extrapolate data and think critically. As a result of the labs along with the lectures in class and the assigned readings, you will have developed these skills throughout the course and as long as you have reviewed all of these components (which will enable you to draw in examples and create a discussion), this should be straightforward. There will be a review and discussion session during the last class and you are free to discuss any concerns and questions you have in class or with me during office hours.

Lecture Outline

DATE	LECTURE TOPIC	READINGS
SEPTEMBER 5	COURSE INTRODUCTION AND THE HISTORY OF EVOLUTION	
SEPTEMBER 7	HISTORY OF HUMAN VARIATION	DEVUYST 2015; #WEISS 1998
SEPTEMBER 12	INTRODUCTION TO DNA	#HYLAND 2018
SEPTEMBER 14	EVOLUTION	#EVANS 2009; #RUBICZ ET AL. 2010
SEPTEMBER 19	LAB 1: LET'S MAKE A BABY	#JONES 2013
SEPTEMBER 21	POPULATION GENETICS	#GREEF 2007
SEPTEMBER 26	IMMUNITY AND BACTERIAL EVOLUTION	McNALLY ET AL. 2016
SEPTEMBER 28	REPRODUCTIVE ISOLATION I	VAN DER GEER ET AL. 2016
OCTOBER 3	HOMINID CHARACTERISTICS	GIBBONS 2002
OCTOBER 5	ENVIRONMENTAL ADAPTATION II	TATTERSALL 2006
OCTOBER 17	HUMAN MIGRATION I & II	CAROTENUTO ET AL. 2016; RASMUSSEN ET AL. 2014; EISENHOFER ET AL. 2017
OCTOBER 19	MIDTERM	
#OCTOBER 24	ANCESTRY	MARKS 2002; JABLONSKI AND CHAPLIN 2017

#OCTOBER 26	FOREIGN DNA	HUBLIN 2017; HAWKS 2017; WOLF AND AKEY 2018
OCTOBER 31	DISEASE ADAPTATION I	KO AND URBAN 2013
#NOVEMBER 2	ENVIRONMENTAL ADAPTATION III	POTTS 2012; JARMAN ET AL. 2017
NOVEMBER 7	LAB 2: UNDERSTANDING YOU AND YOUR TRAITS	BETTI ET AL. 2015
#NOVEMBER 9	CULTURAL VARIATION	STERELNY 2011; MESOUDI 2017
#NOVEMBER 14	DISEASE ADAPTATION II	ELGUERO ET AL. 2015; DONOGHUE 2013
#NOVEMBER 16	REPRODUCTIVE ISOLATION II	JUYAL ET AL 2014; OSTRER AND SKORECKI 2013
#NOVEMBER 21	ALTERING OUR ADAPTATION	MYERS ET AL. 2013; HONDULA ET AL. 2015
NOVEMBER 23	PUBQUIZ	
NOVEMBER 28	LAB 3: WHO IS ALTERING WHOM?	BOYD ET AL 2011; SMITH 2013
NOVEMBER 30	CLASS WRAP-UP	HENDRY ET AL. 2017
DECEMBER 6-16	FINAL EXAM PERIOD	

Journal Articles

Devuyst O. 2015. The 1000 genomes project: welcome to a new world. *Peritoneal Dialysis International* 35: 676-77.

Weiss KM. 1998. In search of human variation. *Genome Research* 8: 691-7.

Hyland C. 2018. A critical evaluation of DNA analysis for paleopathological research. *JUST* 6: 1-8.

Evans C. 2009. Small agencies and great consequences: Darwin's archaeology. *Antiquity* 83: 475-488.

Rubicz R, M Zlojutro, G Sun, V Spitsyn, R Deka, KL Young and MH Crawford. 2010. Genetic architecture of a small, recently aggregated Aleut population: Bering Island, Russia. *Human Biology* 82: 719-36.

Jones CB. 2013. Constraints on speciation in human populations: phenotypic diversity matters. *Human Biology Review* 2: 263-279.

Greeff JM. 2007. Deconstructing Jaco: Genetic heritage of an Afrikaner. *Annals of Human Genetics* 71: 674-88.

- McNally A, NR Thomson, S Reuter and BW Wren. 2016. 'Add, stir and reduce': *Yersinia* spp. As model bacteria for pathogen evolution. *Nature Reviews Microbiology* 14: 177-190.
- van der Geer AAE, GD van den Bergh, GA Lyras, UW Prasetyo, RA Due, E Setiyabudi and H Drinia. 2016. The effect of area and isolation on insular dwarf proboscideans. *Journal of Biogeography* 43: 1656-1666.
- Gibbons A. 2002. In search of the first Hominids. *Science, New Series* 295 (No. 5558): 1214-1219.
- Tattersall I. 2006. Neanderthal skeletal structure and the place of *Homo neanderthanlensis* in European hominid phylogeny. *Human Evolution* 21: 269-74.
- Carotenuto F, N Tsikaridze, L Rook, D Lordkipanidze, L Longo, S Condemi and P Raia. 2016. Venturing out safely: The biogeography of *Homo erectus* dispersal out of Africa. *Journal of Human Evolution* 95: 1-12.
- Rasmussen M, SL Anzick, MR Waters, P Skoglund, M DeGiorgio, TW Stafford Jr. S Rasmussen, I Moltke, A Albrechtsen, SM Doyle, GD Poznik, V Gudmundsdottir, R Yadav, AS Malaspinas, SS White V, ME Allentoft, OE Cornejo, K Tambets, A Eriksson, PD Heintzman, M Karmin, TS Korneliussen, DJ Meltzer, TL Pierre, J Stenderup, L Saag, VM Warmuth, MC Lopes, RS Malhi, S Brunak, T Sicheritz-Ponten, I Barnes, M Collins, L Orlando, F Balloux, A Manica, R Gupta, M Metspalu, CD Bustamante, M Jakobsson, R Nielsen and E Willersley. 2014. The genome of a Late Pleistocene human from a Clovis burial site in western Montana. *Nature* 506: 225-9.
- Eisenhofer R, A Anderson, K Dobney, A Cooper and LS Weyrich. 2017. Ancient microbial DNA in dental calculus: A new method for studying rapid human migration events. *The Journal of Island and Coastal Archaeology* 0: 1-14.
- Marks J. 2002. Folk Heredity. In Jefferson M Fish (ed) *Race and Intelligence: Separating Science from Myth*. Lawrence Erlbaum Associates, Publishers; New Jersey.
- Jablonski NG and G Chaplin. 2017. The colours of humanity: the evolution of pigmentation in the human lineage. *Philosophical Transactions of the Royal Society B* 372: 20160349.
- Hublin J-J. 2017. The last Neanderthal. *Proceedings of the National Academy of Science* 114: 10520-10522.
- Hawks J. 2017. Neanderthals and Denisovans as biological invaders. *Proceedings of the National Academy of Science* 114: 9761-9763.
- Wolf AB and JM Akey 2018. Outstanding questions in the study of archaic hominin admixture. *PLoS Genetics* 14: e1007349.
- Ko DC and TJ Urban. 2013. Understanding human variation in infectious disease susceptibility through clinical and cellular GWAS. *PLOS Pathogens* 9: e1003424.
- Potts R. 2012. Evolution and environmental change in early human prehistory. *Annual Review of Anthropology* 41: 151-67.
- Jarman CL, T Larsen, T Hunt, C Lipo, R Solsvik, N Wallsgrove, C Ka'apu-Lyons and HG Close. 2017. Diet of the prehistoric population of Rapa Nui (Easter Island, Chile) shows environmental adaptation and resilience. *American Journal of Physical Anthropology* 164: 343-361.

- Betti L, SJ Lycett, N von Cramon-Taubadel and OM Pearson. 2015. Are human hands and feet affected by climate? A test of Allen's Rule. *American Journal of Physical Anthropology* 158: 132-40.
- Sterelny K. 2011. From hominins to humans: how *sapiens* became behaviourally modern. *Philosophical Transactions of the Royal Society*. 366: 809-822.
- Mesoudi A. 2017. Pursuing Darwin's curious parallel: Prospects for a science of cultural evolution. *Proceedings of the National Academy of Science* 114: 7853-60.
- Elguero E, LM Délicat-Loembet, V Rougeron, C Arnathau, B Roche, P Becquart, J-P Gonzalez, D Nkoghe, L Sica, EM Leroy, P Durand, FJ Ayala, B Ollomo, F Renaud and F Prugnolle. 2015. Malaria continues to select for sickle cell trait in Central Africa. *Proceedings of the National Academy of Science* 112: 7051-54.
- Donoghue HD. 2013. Insights into ancient leprosy and tuberculosis using metagenomics. *Trends in Microbiology* 21: 448-460.
- Juyal G, M Mondal, P Luisi, H Laayouni, A sood, V Midha, P Heutink, J Bertranpetit, BK Thelma and F Casals. 2014. Population and genomic lessons from genetic analysis of two Indian populations. *Human Genetics* 133: 1273-1287.
- Ostrer H and K Skorecki. 2013. The population genetics of the Jewish people. *Human Genetics* 132: 119-127.
- Myers SS, L Gaffikin, CD Golden, RS Ostfeld, KH Redford, TH Ricketts, WR Turner and SA Osofsky. Human health impacts of ecosystem alteration. *Proceedings of the National Academy of Science* 110: 18753-60.
- Hondula DM, RC Bailling Jr., JK Vanos and M Georgescu. 2015. Rising temperatures, human health, and the role of adaptation. *Current Climate Change Reports* 1: 144-54.
- Boyd R, PJ Richerson and J Henrich. 2011. The cultural niche: Why social learning is essential for human adaptation. *Proceedings of the National Academy of Science* 108: 10918-10925.
- Smith EA. 2013. Agency and adaptation: New directions in evolutionary anthropology. *Annual Review of Anthropology* 42: 103-120.
- Hendry AP, KM Gotanda and EI Svensson. 2017. Human influences on evolution, and the ecological and societal consequences. *Philosophical Transactions of the Royal Society B* 372: 20160028.

COURSE POLICIES

Class expectations: You are expected to read this outline in its entirety and follow all guidelines as they are clearly set out. If you have any questions, ask them as soon as possible. I will not necessarily be checking my e-mail the night before an assignment is due so please plan accordingly. Although we will be discussing evolution throughout this course, we will be maintaining a scientific focus. We will not be debating the merits or the accuracy of evolution in comparison to religious thought. You are free to have whatever opinions you may have on the matter but please leave these non-scientific opinions at the door, as this is not the appropriate forum for them. This class will be a respectful place; no insulting language or actions will be tolerated. **There is absolutely no photography or lecture recording permitted in this class.**

Communication with Dr. Whitaker: Feel free to email me regarding concerns, however please read through the course outline first, as often, the answer can be found here. In composing your email please send it from your Lakehead account, include your course number in the subject field and write a formal email, addressing myself in a respectful manner (see the beginning of this paragraph), use complete sentences and sign your email with your full name and student number. I will try to answer emails in a timely manner, usually within 48 hours.

Readings: You are expected to complete all readings BEFORE the assigned class. We may discuss the readings in class but your lectures will not follow them so come to class prepared to answer questions.

Attendance: It is HIGHLY recommended you attend all classes and labs. It is expected you will show up and participate in every class. Lecture notes and power point presentations WILL NOT be provided so it is up to you to ensure you are keeping up with the pace of the course. Please see me as soon as possible if you feel you are getting behind.

Late Assignments: You are expected to submit all work on time and be in class for all tests. If an assignment is late, 5% will be deducted for 24 hours past the due date (specifically in class, received by 1:00pm) and will not be accepted after three days (72 hours after the deadline). The Anthropology Department will not accept assignments in person or by e-mail. Deadlines are firm and **no extensions** will be given unless there are extenuating circumstances and the appropriate documentation (e.g. doctor's note, obituary) is provided. If an extension is required, Dr. Whitaker must be informed by e-mail at least 24 hours BEFORE the assignment is due by e-mail. Required documentation will be specific to each case but may include a Lakehead medical certificate or death certificate as appropriate. You must have a response from Dr. Whitaker indicating the granting of an extension as confirmation it has been accepted. If you feel a mark should be reconsidered, please discuss it with Dr. Whitaker, in person, during the next available office hour. **ALWAYS** keep a backup copy of your work!

Missed Midterm: If you miss the midterm you must inform Dr. Whitaker **within 24 (twenty-four) hours** with a clear explanation of the circumstances and associated documentation. Required documentation will be specific to each case but may include a Lakehead medical certificate or death certificate as appropriate. A new date for the make-up will be arranged based on Dr. Whitaker's schedule and the format will involve both short and long essay questions.

Academic Conduct: You are expected, as a university student, to abide by and follow the student code of conduct. This means you will submit only your own, original work. If it is found that you have been less than honest in your submission you may receive a mark of zero for the assignment or the course, and may possibly face further penalties. Just don't do it.

GENERAL REGULATIONS

Student Accessibility Services (SAS) (Thunder Bay) and Student Affairs (Orillia) coordinate services and facilitates reasonable academic accommodations for students with disabilities. Academic accommodations are provided on the basis of documentation of a disability. Additional information is available at the following campus websites:

Thunder Bay: <http://learningassistance.lakeheadu.ca/>.

Orillia: <http://orillia.lakeheadu.ca/about-us--orillia-student-affairs/>

ACADEMIC DISHONESTY:

The University takes a most serious view of offences against academic honesty such as plagiarism, cheating and impersonation. Penalties for dealing with such offences will be strictly enforced.

A copy of the "Code of Student Behaviour and Disciplinary Procedures" including sections on plagiarism and other forms of misconduct may be obtained from the Office of the Registrar.

The following rules shall govern the treatment of candidates who have been found guilty of attempting to obtain academic credit dishonestly.

- (a) The minimum penalty for a candidate found guilty of plagiarism, or of cheating on any part of a course will be a zero for the work concerned.
- (b) A candidate found guilty of cheating on a formal examination or a test, or of serious or repeated plagiarism, or of unofficially obtaining a copy of an examination paper before the examination is scheduled to be written, will receive zero for the course and may be expelled from the University.

Students disciplined under the Code of Student Behaviour and Disciplinary Procedures may appeal their case through the Judicial Panel.

Note: "Plagiarism" shall be deemed to include:

- 1. Plagiarism of ideas as where an idea of an author or speaker is incorporated into the body of an assignment as though it were the writer's idea, i.e. no credit is given the person through referencing or footnoting or endnoting.
- 2. Plagiarism of words occurs when phrases, sentences, tables or illustrations of an author or speaker are incorporated into the body of a writer's own, i.e. no quotations or indentations (depending on the format followed) are present but referencing or footnoting or endnoting is given.
- 3. Plagiarism of ideas and words as where words and an idea(s) of an author or speaker are incorporated into the body of a written assignment as though they were the writer's own words and ideas, i.e. no quotations or indentations (depending on format followed) are present and no referencing or footnoting or endnoting is given.

A listing of University Regulations can be found at:

<http://calendar.lakeheadu.ca/current/contents/regulations/univregsintro.html>

The code of student behaviour and disciplinary procedures can be found at:

<http://policies.lakeheadu.ca/policy.php?pid=60>

MISSED FINAL EXAMS:

Make-up examinations will only be given with written documentation from a healthcare practitioner using the official Student Health Certificate, available at

<http://registrar.lakeheadu.ca/uploads/docs/F.HealthCertificate.pdf>

Final examinations run from **December 6th to 16th 2018**, inclusive. There will be no rescheduling of examinations to accommodate holiday travel or extracurricular activities. No one will be allowed to write examinations prior to the scheduled date.