**Nature and Nurture**

BHP 340-01D Honors Seminar

**Instructors:** Julie Drawbridge, Ph.D.

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**Time/Place:** TBA: (Room TBA)

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 **RI** Office: 320A, Science and Technology Center (TBA) Extra times welcomed by appointment

***PURPOSE:*** This Baccalaureate Honors Program (BHP) course will fulfill one of either the Scientific Perspective or the Social Perspective course requirements in the LAS core. Students will examine how developments in biological and psychological sciences have shaped our understanding of human characteristics as being innate or acquired. Among the big questions addressed will be:

* To what extent does it make sense to partition human characteristics into either nature or nurture?
* How do theories of evolution contribute to our understanding of nature and nurture?
* How have ideas of nature v nurture influenced societal attitudes toward individuals? (e.g. the eugenics movement, class structure, public education)
* What are the biological mechanisms underlying both acquired and innate characteristics?

***COURSE DESCRIPTION:*** Nature and Nurture explores questions of innate and environmental influences on who we are. The history of the false Nature v. Nurture debate as well as our current understanding of how innate and environmental factors influence human characteristics are explored via discussion of current scholarly articles from the social and life sciences.

***LEARNING OUTCOMES:***

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| **Course Learning Outcomes**  | **Brief Description of Sample Assignment**  | **University Learning Outcomes** |
| 1. Define and describe what is meant by 'nature' and 'nurture' as each term pertains to explanation and prediction in the social and biological sciences. 2. Interpret major theories/landmark findings pertinent to the nature/nurture debate using everyday language.3. Critically evaluate the construction of explanations of scientific findings for both scientific and lay audiences.  | Final Project: Collate and synthesize the findings in biological and social science primary literature on a topic of interest relevant to this course and "translate" the information to inform an intelligent lay audience about the topic and its scientific and social implications. The results will be presented in 2 formats: a short TED talk and an article written in the style of a [New York Times Science Times](https://www.nytimes.com/section/science) article. | Critical ThinkingWritten CommunicationQuantitative LiteracyOral CommunicationEthics and Social ResponsibilityConnected Learning |
| 1. Define and describe the nature-nurture stances and summarize arguments from empirical research for and against each stance a scientific construct/explanatory tool.2. Assess the validity of the nature/nurture dichotomy itself, and characterize explanations as appealing to one or the other. 3. Evaluate empirical research with respect to their take on nature and nurture and identify key factors within their field of study/practice that favor one or the other. | Students will present three times during the semester on one of the topics discussed in class that they choose to research in greater depth. These presentations, and the feedback received from them, will help them to scaffold their thinking for their final paper. | Scientific Reasoning Oral Communication Information Literacy  |
| 1. Critically evaluatecompeting scientificarguments to explain the same phenomena.2. Develop a coherent perspective on the current state of the discourse on nature and nurture within the social and biological sciences. 3. Propose novel research or a synthesis of existing work to advance their own individual argument.  | Students will complete three "short papers" that will require them to demonstrate that they can analyze primary literature as well as identify questions that remain unanswered on the topic under investigation. | Critical ThinkingScientific Reasoning Written Communication Information literacy  |

***SAMPLE BIBLIOGRAPHY:*** No formal textbook will be used in this course. Primary and secondary sources used may include:

Adams, J. (2008). Obesity, epigenetics, and gene regulation. Nature Education 1(1):128

Bartlett A.A., Singh R., Hunter R.G. (2017). Anxiety and Epigenetics. In: Delgado-Morales R. (eds) Neuroepigenomics in Aging and Disease. Advances in Experimental Medicine and Biology, vol. 978.

Biglan, A. (2015). The Nurture Effect: How the Science of Human Behavior can Improve Our Lives and Our World (Selections). New Harbinger Press. 272p.

Brookes, M. (2004). Extreme Measures: The Dark Visions and Bright Ideas of Francis Galton. Bloomsbury. 288p

Darwin, C. (1859). On the Origin of Species.

Flinn, J. (2016). Both Genetic and Environmental Changes Can Enhance Learning and Memory. J Undergrad Neurosci Educ. 15(1): R14–R16.

Gottlieb, G. (2000). Environmental and behavioral influences on gene activity. Current Directions in Psychological Science, 9(3), 93–97. https://doi.org/10.1111/1467-8721.00068

Heim C, Binder, E. B. (2012). Current research trends in early life stress and depression: Review of human studies on sensitive periods, gene-environment interactions, and epigenetics. Experimental Neurology, 233, 102–111.

Jones, A.P., &Friedman, M.I. (1982). Obesity and adipocyte abnormalities in offspring of rats undernourished during pregnancy. Science 215:1518–1519.

Lamarck, J. B. (1809). Theory as to the Evolution of Man (selections)

Lester, B., et al. (2011). Behavioral epigenetics. Annals of the New York Academy of Sciences 1226: 14-33

Locke, J. (1765). An Essay Concerning Human Understanding (selections)

Maze, I, & Nestler, E. (2011). The epigenetic landscape of addiction. Annals of the New York Academy of Sciences 1216: 99-113

McEwen, B.S., & Bulloch, K. (2019). Epigenetic impact of the social and physical environment on brain and body. Metabolism 100, Supplement

Norrgard, K. (2008). Human testing, the eugenics movement, and IRBs. Nature Education 1(1):17

Oyama, S. (2000). The ontogeny of information: Developmental Systems and Evolution (Science and Cultural Theory) (selections). Duke University Press.

Roseboom, T., de Rooij, S., Painter, R. (2006). The Dutch famine and its long-term consequences for adult health. Early Hum Dev 82:485–491

Sapolsky, R. M. (2005) Monkeyluv (selections).

Schneider, S. (2012) The Science of Consequences (selections). Prometheus. 384pp

Tammen, S.A., et al. (2012). Epigenetics: The link between nature and nurture. Molecular Aspects of Medicine, <http://dx.doi.org/10.1016/j.mam.2012.07.018>

Tang Y-P, Shimizu E, Dube GR, Rampon C, Kerchner GA, Zhuo M, Liu G, Tsien JZ. (1999) Genetic enhancement of learning and memory in mice. Nature 401:63–69.

Tang Y-P, Wang H, Feng R, Kyin M, Tsien JZ. (2001). Differential effects of enrichment on learning and memory function in NR2B transgenic mice. Neuropharmacology 41:779–790.

Taniguchi, M., et al. (2017). HDAC5 and its target gene, Npas4, function in the nucleus accumbens to regulate cocaine-conditioned vehaviors. Neuron 96 (1): 130 DOI: [10.1016/j.neuron.2017.09.015](http://dx.doi.org/10.1016/j.neuron.2017.09.015)

Traynor, B., & Singleton, A. (2010). Nature versus nurture: death of a dogma, and the road ahead Neuron 68 (2): 196-200.

Youngson, N.A., & Margaret, J. (2013). What obesity research tells us about epigenetic mechanisms. Morris Philos Trans R Soc Lond B Biol Sci. 368(1609): 20110337. doi: 10.1098/rstb.2011.033

Zimmer, C. (2018). She Has Her Mother’s Laugh: The Powers, Perversions, and Potential of Heredity. Random House.

***COURSE SCHEDULE:***

**NOTE:** Instructor reserves the right to modify aspects of the course (e.g., readings) during the semester to better serve the needs of the students.

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| Week | Topic | Sample Bibliography | Assignment  |
| 1 | Introduction, What do we mean by Nature and Nurture? | Tammen SA et al. (2012)Traynor & Singleton (2010) Zimmer (2018) |  |
| 2 | History of (False) Debate | Brooks (2004)Darwin (1859)Lamarck (1809)Locke (1765)Zimmer (2018) | Student Analysis of Assigned Readings  |
| 3 | History of (False) Debate |
| 4 | Intelligence | Brooks (2004)Flinn (2016)Gottlieb (2000)Norrgard (2008)Sapolsky (2005)Tang et al. (1999, 2001)Zimmer (2018) | Quiz |
| 5 | Intelligence |  |
| 6 | Intelligence  | Student Analysis of Assigned Readings  |
| 7 | Stress, Anxiety, & Depression | Bartlett et al. (2017)Heim & Binder (2012)Lester et al. (2011)McEwen & Bulloch (2019)Taniguchi et al. (2017) | Quiz Student Presentations: Final Topic Proposals |
| 8 | Stress, Anxiety, & Depression |  |
| 9 | Stress, Anxiety, & Depression  | Student Analysis of Assigned Readings  |
| 10 | Obesity & Metabolic Syndrome | Adams (2008)Jones & Friedman (1982)Rosboom et al. (2006)Youngson (2013) | Quiz |
| 11 | Obesity& Metabolic Syndrome |  |
| 12 | Obesity & Metabolic Syndrome | Student Analysis of Assigned Readings  |
| 13 | TED Talk Presentations  |  | Quiz – Science Times article due during Finals week |

***GRADES:***

Your grade will be calculated as follows:

 30% - 4 quizzes

 15% - Three In-class presentations

 15% - Three Data interpretation “short papers”

 10% - Mindful participation (not just attendance)

 30% - Final Project (Science Times article and TED talk)

No extra credit opportunities will be offered in this class and no curve will be applied to the grade scale.

Final letter grades will be assigned as follows: 93 - 100% = A; 90 – 92% = A- ; 87 - 89% = B+; 83 - 86% = B; 80 - 82% = B- ;77 - 79% = C+; 70 - 76% = C; 60 - 69% = D; <60 = F

Quizzes: We will have a quiz at the end of each module of the course. Each quiz will assess what students have learned from lecture exercises, discussion, and course readings. Format will be short answer/essay.

Presentations: Students will present three times during the semester on one of the topics discussed in class that they choose to research in greater depth. These presentations, and the feedback received from them, will help them to scaffold their thinking for their final paper

Final Project: Students will research and synthesize the findings in biological and social science primary literature on a topic of interest, relevant to this course, and "translate" the information to inform an intelligent lay audience about the topic and its scientific and social implications. The results will be presented in 2 formats: a short TED talk and an article written in the style of a [New York Times Science Times](https://www.nytimes.com/section/science) article.

Mindful Participation (it’s more than just attendance): Participation points are earned based on three criteria: 1) attending class, 2) actively participating in the discussion in class, and 3) being respectful of others when discussing what another student has said.

Students are expected to read and think about the assigned readings before each class. You are also expected to actively participate in class lecture and discussions. You cannot be an active participant if you are not here. Bottom line: come to class, bring the reading materials with you, and share your thoughts and questions.

***MAKE-UP POLICIES***

* All point-bearing assignments must be submitted to Canvas on time or the student will not receive credit for that assignment.
* Make-up quizzes will only be given in extreme circumstances. Students that have medical or life emergencies that prevent them from attending class or taking an exam should immediately contact the office of the Dean of Students (administrative specialist Vanessa Fox, vafox@rider.edu, 609-896-5101) to discuss the appropriate course of action. No make-up exams will be considered without documentation from the Dean of Students. In the rare case that make-up exams are permitted, they may be oral exams administered by the instructor.

***DIVERSITY AND INCLUSION:***We are dedicated to creating a learning environment for students in which diversity is valued. We broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, and physical and learning ability. Therefore:

* If you have a name and/or set of pronouns that differ from those that appear in your official Rider student records, please let us know.
* It is our and the University’s goal that academic experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please contact [Student Accessibility and Support Services (Links to an external site.)](https://www.rider.edu/academics/academic-support-services/student-accessibility-support-services) so that we can provide you with reasonable accommodations.
* While disagreement is inevitable and encouraged in academic discourse, it is our expectation that formal and informal discussions in class be conducted with sensitivity, respect and cordiality. Disrespectful or demeaning language and behaviors are not allowed. Please notify one of us immediately if you observe or experience such behavior.
* If you have an idea for improving the classroom learning environment, please tell us.
* Click [here (Links to an external site.)](https://www.rider.edu/offices-services/student-affairs/departments/center-diversity-inclusion/resources) for campus resources.

***CODE OF ACADEMIC INTEGRITY*:** All students in this course are expected to behave according to the spirit and letter of the Rider University Code of Academic Integrity as outlined [here (Links to an external site.)](http://catalog.rider.edu/policies/code-academic-integrity/). Students who cheat or commit other acts of academic dishonesty will receive a zero on the assignment, may receive a grade of F for this course, and/or may be excused from the University.

***OTHER IMPORTANT STUFF:***

* Your Rider email account is your email address for all official email communications from the University. Communications from us about this course will be sent to your official Rider email address or through Canvas announcements. Any communication from you to us must come from your Rider email address or the Canvas message system.
* Check your email, Canvas inbox and the course website frequently. This will be our main method of keeping you informed of course-related news and changes. You are responsible for knowing this stuff whether or not you've checked your email and the course website.
* If you wish us to consider any of your work for re-grading, you must make an appointment to discuss this with an instructor, in person, no earlier than 24 hours after, and no later than 7 days after receiving the graded assignment. No exceptions.
* Educational research (click here (Links to an external site.) for an example) tells us that open laptops/tablets in class distracts both the student using the device and surrounding students. Therefore, these devices are not allowed during class unless the instructor gives explicit directions to use them.
* Cell phones are becoming increasingly disruptive in our lives and our classrooms. Therefore, each time your cell phone rings, vibrates, buzzes or otherwise makes its existence known, or if you send or receive text-messages in class, you will lose 5 quiz points. Cell phones should always be off and out of sight unless the instructor gives explicit directions to use them.