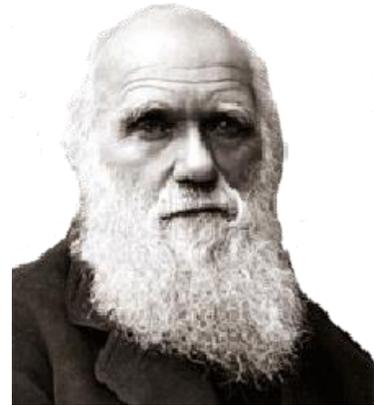


Biology 1320 – The Darwinian Revolution

Instructor

Dr. Michele A. Johnson
Trinity University, Department of Biology
Email: mjohnso9@trinity.edu

Class meetings: Monday, Wednesday, 2:30-3:45pm
Office hours: Tuesday, 3:30-5pm; Thursday, 1:30-3:30pm
Or by appointment



Class [Google calendar](#), with all Zoom links (must sign in using gmail)

Course objectives

Populations change through time, and understanding how and why they change is central to the study of biology. But, this wasn't always the case. At the time Charles Darwin was developing the theory of evolution by natural selection, most scientists and the public alike believed that plants and animals were static, not changing since the time of creation. Thus, the writings of Darwin transformed our understanding of the dynamic natural world. His ideas have further shaped the fields of medicine, agriculture, and social policy, and motivated great works of art and literature. This course will explore the development of Darwin's revolutionary ideas through a survey of his life, his major written works, and the influence of his writing on modern thinking.

My Learning Goals for you in this course are as follows:

1. To be able to describe Charles Darwin's development as a naturalist, and the development of his ideas about evolution.
2. To be able to describe natural and sexual selection, two of the mechanisms by which evolution occurs.
3. To carefully observe the natural world around you, and to think critically and creatively about the patterns you see.
4. To evaluate the influence of evolutionary theory on a wide range of topics.

Interdisciplinary Cluster statement

This course is part of the Interdisciplinary Cluster, "The Spirit of Our Age: Nineteenth Century Science and Culture." The purpose of the Cluster is to explore the emergence in the nineteenth century of institutions, concepts, disciplines, and systems that shape our contemporary politics, economics, art, literature, and scientific research. Students taking the course as part of the Cluster will examine the Darwinian Revolution using the analytical and interpretive methods appropriate to Biology. These methods include observation of the natural world, reading and analyzing historical and modern texts on evolutionary biology, and developing and evaluating evolutionary hypotheses. Upon completion of the Cluster, students should be able to see how the methods that this course uses to foster a critical understanding of the nineteenth century differ from those used in other courses in the Cluster.

If you are taking this course as part of the Cluster, please notify the instructor. Students in their second course in the Cluster may and students in their third course must discuss with the instructor ways to synthesize material and concepts treated in the various Cluster courses.

Required texts

All of Darwin's writings are freely available online. You only need to purchase or borrow these texts if you wish to read them in hard copy.

- *The Voyage of the Beagle* (Charles Darwin, 1839)
- *On the Origin of Species* (Charles Darwin, 1859 – first edition!)
- *The Descent of Man* (Charles Darwin, 1871)
- *The Expression of the Emotions* (Charles Darwin, 1872)
- Additional readings will be available on the course TLEARN site.

Grading and assessment

Field notebook – 15%

Students will keep a field notebook, much like Darwin did, in which they will record observations, notes, and ponderings throughout the semester. Notebooks will be periodically assessed during the semester. (Learning Goals 2 and 3)

Travel journal assignment – 10%

After reading the *Voyage* and exploring a local natural area, you will write an essay in the style of a 19th century travel journal. (Learning Goals 1 and 3)

Artificial selection infographic – 10%

You will select one of the species shaped most dramatically by human selection and create an infographic to present to your peers comparing the wild, progenitor species to the current domesticated versions. (Learning Goals 2 and 4)

Human behavior paper – 10%

You will select an aspect of human behavior and in a 3-4 page paper, critically evaluate the evolution of this behavior from a sociobiological perspective. (Learning Goal 2)

Paper on Darwin's influence in "your" field – 15%

You will select a concept, problem, or major work in your field of interest, and in a ~10 page paper, evaluate how evolutionary thinking (particularly from a Darwinian perspective) influences that issue. (Learning Goal 4)

Exams – 30%

Two mid-semester examinations will assess your knowledge of course content and your ability to think critically about and solve problems related to evolution. (Learning Goals 1-4)

Class participation – 10%

You will be expected to post reading notes in response to directed reading questions on TLEARN before class (for most reading note submissions, ~200 words is appropriate), and actively participate in class discussions.

Class attendance

We will meet twice per week in Zoom. Your presence in class is vital to our classroom community, and is necessary for the development of your understanding of course material. Please attend all course meetings to the best of your ability, and come to class prepared to participate, completing all assigned readings before class. If you must be absent, please let me know ahead of time, whenever possible. Our class sessions will all be recorded and available on TLEARN, so if you miss class, be sure to watch the recording of the session you miss.

Class discussions via Zoom are often most effective when we can see one another, especially because our class is small. However, there are a number of valid reasons why you might not be able to share your video feed, and you will not need to provide an explanation if you need to keep your video off. I encourage you to share your video anytime you can during our class meetings.

Honor Code

All students are covered by a policy that prohibits dishonesty in academic work. Under the Honor Code, a faculty member will (or a student may) report an alleged violation to the Academic Honor Council. It is the task of the Council to investigate, adjudicate, and assign a punishment within certain guidelines if a violation has been verified.

Further, any materials created by your instructor to enhance or assess your learning in this class (including but not limited to exams, exam keys, problem sets, and lecture slides) are proprietary materials that may not be shared with anyone without prior authorization from Dr. Johnson. **Sharing these documents in any way is a violation of the Honor Code** and infractions will be reported to the Honor Council. The sale or donation of these materials to any organization that, as a business or community service, provides study aids is included in this policy. This includes providing materials to such organizations over the internet.

Students are required to pledge all written work that is submitted for a grade: "On my honor, I have neither given nor received any unauthorized assistance on this work" and their signature. The pledge may be abbreviated "pledged" with a signature.

Electronic recording of classroom instruction

The COVID-19 pandemic requires the delivery of online instruction. For this reason, please be aware that all classroom instruction, including student participation in classroom activities, is subject to recording and dissemination on the University's secure course management system (TLEARN). The recordings will be made available only to students enrolled in the course to facilitate online learning and review. Students are expressly prohibited from capturing or copying classroom recordings by any means; violations will be subject to disciplinary action. Instructors who wish to use a recording outside of class must obtain the written consent of any students who are personally identifiable in the recording.

Note to students with disabilities

The University has a continuing commitment to providing reasonable accommodations for students with documented disabilities. Like so many things this fall, the need for accommodations and the process for arranging them may be altered by the COVID-19 changes we are experiencing and the safety protocols currently in place. Students with disabilities who may need some accommodation in order to fully participate in this class are urged to contact Student Accessibility Services, as soon as possible, to explore what arrangements need to be made to assure access. During the Fall 2020 semester, the Student Accessibility Services can be reached by email at sas@trinity.edu.

Schedule of course topics, readings, and assignment due dates

Before each class meeting, we will read selections from a book or other articles that will build a foundational understanding of the topics that we will explore in greater detail in class.

August 26 *Introduction to course – why study Darwin?*

August 31 *Evolutionary thinking before Darwin*

- Genesis 1-2 (in your own Bible, or available online at <http://www.biblestudytools.com/nrs/>)
- Farber, P.L. 2000. "Collecting, classifying, and interpreting nature: Linneaus and Buffon, 1735-1788." In: *Finding Order in Nature*. Johns Hopkins University Press. pp. 6-21. (TLEARN)

- Lamarck, J.B. 1809. "Of species among living bodies and the idea that we should attach to that word." In: *Zoological Philosophy*. Translated by Hugh Elliot, 1984. University of Chicago Press. pp. 38-40; 43-45 (TLEARN)

September 2 *The young Charles Darwin*

- Darwin's *Autobiography*, p. 21-82. Available at <http://darwin-online.org.uk/content/frameset?viewtype=text&itemID=F1497&pageseq=1>

September 7 *The voyage of the H.M.S. Beagle: The early years*

- Lyell, C. 1830. *Principles of Geology*. Chapters 1 and 6. Available online at: <http://www.gutenberg.org/ebooks/33224>.
- Darwin, C. 1839. *The Voyage of the Beagle*. Chapters 1-3.

September 9 *The voyage of the H.M.S. Beagle: Patagonia and Falklands, Tiera del Fuego*

- Darwin, C. 1839. *The Voyage of the Beagle*. Chapters 9-10.

September 14 *The voyage of the H.M.S. Beagle: Galapagos, Tahiti, New Zealand*

- **Guest: Colleen Hoelscher, Special Collections, Coates Library.**
- Darwin, C. 1839. *The Voyage of the Beagle*. Chapters 17-18.
- Daily Mail article on nineteenth century travel guides: http://www.dailymail.co.uk/travel/travel_news/article-2733416/The-riotously-PC-travel-guides-The-informed-detailed-authoritative-unguardedly-rude-Baedeker-Guides.html

September 16 *The voyages of the BIOL 1320 class*

- **Personal field trips to local natural areas**

September 21 *Science journalism in the 1840s*

- Chambers, R. 1844. *Vestiges of the Natural History of Creation*. University of Chicago Press. pp. 222-235. (TLEARN)
- Secord, J.A. 1989. "Robert Chambers and Vestiges." In: *History, Humanity, and Evolution*. Cambridge University Press. pp. 166-188. (TLEARN)
- Modern science journalism, reading(s) TBA

September 23 *Getting "scooped": Darwin and Alfred Russel Wallace*

- Darwin, C. and A.R. Wallace. 1858. Proceedings of the meeting of the Linnean Society held on July 1st, 1858. *Journal of the Proceedings of the Linnean Society. Zoology*. (TLEARN)

September 25 **DUE:** Travel journal assignment

September 28 *The Origin: Variation in plants and animals*

- Darwin, C. 1859. *On the Origin of Species*. Chapters 1-3.

September 30 *The Origin: Natural selection*

- Darwin, C. 1859. *On the Origin of Species*. Chapter 4.

October 5 *The Origin: Difficulties with the theory*

- Darwin, C. 1859. *On the Origin of Species*. Chapters 6, 9, conclusion in 14.

- October 7 *Artificial selection in the modern world: Infographic presentations*
DUE: Artificial selection infographic
- October 12 Collaborative preparation for exam
- October 14-16 **Exam 1**
- October 19 *The Descent of Man: Introduction to human evolution*
- **Guest lecture by Dr. Jennifer Mathews, Anthropology.**
 - Darwin, C. 1871. *The Descent of Man*. Chapters 1-3.
- October 21 *The Descent of Man: Race*
- Darwin, C. 1871. *The Descent of Man*. Chapter 7
 - Gibbons, A. 2014. Shedding light on skin color. *Science* 346: 934-936 (TLEARN)
- October 26 *The Descent of Man: Sexual selection*
- Darwin, C. 1871. *The Descent of Man*. Chapter 8 and chapter(s) on taxa of choice (9-18).
- October 28 *The Descent of Man: Sexual selection in humans*
- Darwin, C. 1871. *The Descent of Man*. Chapters 8, 19-21.
 - Walter, K.V. et al. 2020. Sex differences in mate preferences across 45 countries: a large-scale replication. *Psychological Science* 31: 408-423. (TLEARN)
 - **DUE:** Proposal for paper on Darwin's influence in "your" field
- November 2 *Implications of "social Darwinism": Eugenics*
- Pearl, R. 1908. Breeding better men. *The World's Work*. January 1908: 9818-9824. (TLEARN)
 - Davenport, C.B. 1921. Comparing social traits of various races. *School and Society* 14:344-348. (TLEARN)
 - Dight, D.F. 1926. The need for the application of eugenic measures for the prevention of crime and race betterment. *The Journal-Lancet* Dec. 1, 1926: 1-3. (TLEARN)
 - Brechin, G. 1996. Conserving the race: Natural aristocracies, eugenics, and the U.S. conservation movement. *Antipode* 28: 229-245. (TLEARN)
- November 4 *Evolution and political cartoons*
- No pre-class reading assignment.
- November 9 *Emotions and evolution: How expressions are produced*
- Darwin, C. 1872. *The Expression of the Emotions in Man and Animals*. Chapters 1-3.
- November 11 *Emotions and evolution: Expressions in animals*
- Darwin, C. 1872. *The Expression of the Emotions in Man and Animals*. Chapters 4-5.
- November 13 **DUE:** Human behavior paper

November 16 *Emotions and evolution: Human expression*

- Darwin, C. 1872. *The Expression of the Emotions in Man and Animals*. Two chapters of your choice (6-13); Chapter 14.

November 18-20 **Exam 2**

November 23-27 **Thanksgiving Break**, no class

November 30 *Modern studies of evolution*

- Reading TBD

December 2 *Modern studies of evolution*

- Reading TBD

December 7 *Modern studies of evolution*

- Reading TBD

December 9-10 *Reading days*

December 17 **Final exam period**, 3:30-6:30pm

- **DUE:** Final paper on Darwin's influence in "your" field

NOTE: This schedule is subject to change as needed. If and when changes occur, announcements will be made in class and on the course TLEARN site.

Fall elections

The general election for president and other federal and state offices will be on **Tuesday, November 3, 2020**. If you are a U.S. citizen, voting is one of the main ways you can influence government policies.

- In order to vote in Texas in the general election, you must register to vote no later than **October 5, 2020**. To register to vote in Texas: <https://www.votetexas.gov/faq/registration.html>.
- In Texas, you can vote early. The early voting period starts on the morning of **Tuesday, October 13, 2020** and ends on the evening of **Friday, October 30, 2020**. Click on this link for answers to early voting FAQs: <https://www.votetexas.gov/faq/early-voting.html>.
- Starting in September, you can locate your polling place and its hours for early voting and November 3 voting by clicking on this link: <https://www.votetexas.gov/>.
- You can vote by mail in Texas if you fulfill certain requirements. Get information about voting by mail by clicking on this link: <https://www.sos.texas.gov/elections/voter/regabbm.shtml>.
- If you will be voting in a state other than Texas, click on this link to get information about how to do it: <https://turbovote.org>.

Finally, one of the greatest contributions you can make in the 2020 election is serve as a poll worker. Due to COVID-19, there is a tremendous shortage of people able to operate voting stations. These are **PAID POSITIONS**. You can learn more about these positions, what shifts are available, how much they pay, and how to apply for them here: <https://www.bexar.org/2182/Apply-as-an-Election-Official>.

Sexual misconduct reporting

When students experience sexual misconduct, they sometimes seek out a trusted professor with whom to talk. You should know that most faculty and staff are "Mandatory Reporters," including Dr. Johnson. What that means is that I am *required by Texas law* to report any instances of sexual misconduct that I am aware of to the Title IX Coordinator, including sexual harassment, non-consensual sexual intercourse, non-consensual sexual contact, sexual exploitation, intimate partner violence, stalking, and related retaliation. So, if you share information with me about any incidents that implicate the Sexual Misconduct or Anti-Harassment Policies, I am required to report all information to the Title IX Coordinator to make sure you have information about support resources and complaint resolution options. **A "report" does not initiate the complaint process; you are in control over how to engage with our Title IX Coordinator.** Information about reporting is available here: <https://inside.trinity.edu/human-resources/equal-opportunity-services/sexual-misconduct/reporting>. If you wish to talk with someone confidentially who is not a Mandatory Reporter, you may talk with staff in Counseling Services, Health Services, or the University Chaplain. (All other university faculty and staff, including those in Residential Life, are Mandatory Reporters.)

Academic support

Trinity faculty hold students to the highest academic standards, but we also know that the very best students seek out help when necessary. The following resources are in place to support your academic success; learn more at gotu.us/success:

Academic Success: time management, student skills, test anxiety, note taking, tutoring
Career Services: major exploration, career guidance
Counseling Services: mental health concerns, mental health referrals
Quantitative Reasoning and Skills Center: quantitatively-demanding coursework
Student Accessibility Services: accommodations for a diagnosed disability
Wellness Center: nutrition, sleep, stress management
Writing Center: starting a paper, finding a thesis, drafting and editing