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BIO 013: Writing in the Sciences - Evolutionary Themes, syllabus

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BIO 013: Writing in the Sciences – Evolutionary Themes

(OER Format)

SYLLABUS

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Class Meeting Time:

COURSE DESCRIPTION:

Science informs the world, and scientists are the primary informants. From the laboratory bench, and from the field, ideas are harvested and transcribed, creating the scientific literature. Like science itself, “writing science” involves thought, experimentation, and revision – a process fundamental to sharing ideas with other scientists and with society. This semester, as science writers, we will focus on themes relating to **evolution** - the unifying theory in biology that supports a common ancestry to all life forms. Evolutionary theory is rooted in the literature, originating with Charles Darwin’s landmark book, *The Origin of Species* (1859), where Darwin introduces the idea of the mutability of species to his audience - a skeptical 19th century society.

Similarly, in this writing seminar, we explore evolutionary themes through writing adapted to particular audiences. Our writing perspectives are: 1-scientists writing for themselves (e.g. field and laboratory logs); 2-scientists writing for scientists (e.g. journal articles, abstracts); 3-scientists writing for students (e.g. textbooks, instructional materials); and 4-scientists writing for society (e.g. essays, periodicals, books). To inform our own writing, we read and discuss Darwin’s original works, and the writings of more contemporary evolutionary theorists, including Theodosius Dobzhansky, Ernst Mayr, Alison Jolly, Douglas J. Futuyma, and Stephen Jay Gould – all of whom substantiated, expanded upon, and forwarded Darwin’s theory of evolution.

English Composition 2 – Writing in the Sciences, is a second semester, discipline-based writing seminar that provides students with the opportunity to hone their writing skills within a field of scientific inquiry. Because lucid writing is essential to communicating science, students will work on the clear expression of ideas within different genres of scientific literature. In developing the science writer’s craft, students will also gain techniques applicable to other academic disciplines – since writing skills have a universal application.

READING LINKS:

- 1) *Writing for Science* by Robert Goldbort, Yale University Press, 2006, ProQuest link: <https://ebookcentral.proquest.com/lib/qc-ebooks/detail.action?docID=3419822&pq-origsite=primo>
- 2) *QC College Writing Handbook* (pdf): <http://collegewriting2.qwriting.qc.cuny.edu/files/2018/01/CW1-CW2-Handbook-Jan-18.pdf>.
- 3) <https://openstax.org/books/concepts-biology/pages/11-1-discovering-how-populations-change>
- 4) <https://openstax.org/books/concepts-biology/pages/12-2-determining-evolutionary-relationships>
- 5) <https://openstax.org/books/concepts-biology/pages/11-4-speciation>
- 6) <https://openstax.org/books/concepts-biology/pages/11-5-common-misconceptions-about-evolution>

BLACKBOARD READINGS:

Additional course readings are posted on Blackboard under the Course Materials link. The readings are listed by Week in the Course Calendar section of this syllabus.

LEARNING OBJECTIVES :

- To develop a voice or perspective in a written work. Who are you in relation to this work? (Original researcher, peer reviewer, journalist?)
- To format a written work for a particular genre, such as a research article, an abstract, a field/laboratory journal, a scientific essay, or a trade journal article.
- To introduce and utilize scientific terminology effectively and appropriately integrate figures, graphs and images within a work.
- To dispel the “myth of complexity” that the more complex the writing, the better the science. An important goal is therefore to develop the writer’s craft in communicating ideas clearly.
- To develop self-assessment and peer-assessment skills in evaluating what makes effective writing.

ASSIGNMENTS:

Writing Assignment #1: Scientists Writing for Themselves - A Field Journal. (5 – 6 pages)

You are visiting the legendary Galapagos Archipelago, where Darwin's observations and field notes lead to some of his most compelling studies on speciation. Select an indigenous bird, reptile or mammal to research, documenting its habitat and activity in the field, and recording information as three or four entries in a journal log. There are many good online "virtual tours" of the Galapagos that may help you to visualize the region. The journal, while intended primarily for your own use, should be written in standard English.

Learning goals: Development of descriptive language, concise phrasing, and accurate recording of information

Writing Assignment #2: Scientists Writing for Scientists – A “Perspectives” Article for the Journal *Science*. (5 – 6 pages)

As a biologist with research interests on human origins, you are writing an article for the "Perspectives" section in the journal *Science*. Your topic is recent developments in human ancestry. Your discussion may revolve around the placement of *Australopithecus sediba*, or *Ardipithecus ramidus* ("Ardi") in the family tree, or DNA analyses that indicate the presence of Neanderthal and Denisovan DNA in modern humans. A "Perspectives" article explores and evaluates the recent literature from the perspective of the writer, and provides a list of references.

Learning Goals: Researching a topic from multiple sources; comparing perspectives; developing a scientific "voice"; clarity in expression of ideas; appropriately citing sources.

Writing Assignment #3: Scientists Writing for Society - Essay for a Periodical. (5 – 6 pages)

"Natural History", the magazine of the American Museum of Natural History, has commissioned you to write an essay in the tradition of Stephen Jay Gould's column, "This View of Life", relating evolutionary theory to an aspect of art, literature, history, philosophy or contemporary culture. The column, published monthly up through January, 2001, was based on musings of an evolutionary biologist who found analogies between evolutionary processes and diverse aspects of human culture.

For example, in one essay, "A Biological Homage to Mickey Mouse", Gould likened the evolution of Mickey in drawings, to a reverse developmental process – where the later, most highly-evolved drawings of Mickey had the most infantile proportions, and the earliest drawings had the most adult proportions. The essay addressed how evolutionary principles are unconsciously interwoven in art.

Your task is to brainstorm a commonality between art, literature, history, or philosophy with biology, and write an interpretive essay, suited for a museum-going audience with limited scientific background. Reading one of Gould's essays will provide a model for this assignment.

Learning Goals: Drawing parallels between biology and other disciplines; expression of ideas for an educated non-scientist audience; honing techniques for "readability" for a general audience.

EVALUATION/GRADING:

Since writing is a process of revision, students should expect that all formal writing assignments will undergo at least one “edit” before a work is considered to be a “final draft”. Only the final draft will be given a formal letter grade, however, each assignment will also be evaluated in terms of its development through the writing process. This evaluation includes how well the student reflects upon and responds to suggestions for modification of earlier drafts.

ACADEMIC INTEGRITY POLICY:

English Composition 2 – Writing in the Sciences, adheres to the *CUNY Policy on Academic Integrity*, which addresses issues of honesty in the academic community. This document may be viewed at: <http://www.qc.cuny.edu/StudentLife/services/studev/Documents/Academic%20Violation%20Form%20RV.pdf>. Of particular importance to a writing seminar is avoiding plagiarism. Students should refer to the *Writing at Queens* site to understand this issue: <http://writingatqueens.org/for-students/what-is-plagiarism/>.

SPECIAL ACCOMODATIONS:

Students requiring special accommodations, due to disability, should work through the Office of Special Services (718-997-5870) located in Frese Hall. This office will help coordinate student needs with course requirements.

COURSE CALENDAR:

Seminar 1: (Date) **Themes:** Course Introduction; Scientists Writing for Themselves; In the footsteps of Darwin – exploring the Galapagos and evolutionary ideas.

Blackboard Reading #1: Charles Darwin, *On the Origin of Species* – “Introduction”. (*On the Origin of Species* (1859; rpt. Cambridge, Mass. 1964.)

Blackboard Reading #2: Charles Darwin, *Journal of Researches* – “Galapagos Archipelago”. (*Journal of Researches into the Natural History and Geology of the Countries Visited During the Voyage of H.M.S. Beagle*, ed. R.D. Keynes (1860; London, 2003).

Reading Link 1: Robert Goldbort, Ch. 1, “Scientific English”

Seminar 2: (Date) **Themes:** Scientists Writing for Themselves; Evaluating earlier ideas prior to Darwin's Evolutionary Theory.

Blackboard Reading 3: Ernst Mayr, "How and Why Does Evolution Take Place?" (Mayr, E. (2001) *What Evolution Is*. New York, NY: Basic Books.)

Blackboard Reading 2: Charles Darwin, *Journal of Researches* – "Galapagos Archipelago".

Reading Link 1: Robert Goldbort, Ch. 1 & 2, "Scientific English" & "Laboratory Notes".

Seminar 3: (Date) **Themes:** Scientists Writing for Themselves; Evolutionary theory through a historical lens.

Blackboard Reading 4: Stephan J. Gould, *The Structure of Evolutionary Theory* – "The Problem of History". (Gould, S.J. (2002) *The Structure of Evolutionary Theory*. Cambridge, MA: Harvard University Press.)

Seminar 4: (Date) **Themes:** Scientists Writing for Themselves; the importance of population-thinking in modern evolutionary study.

Reading Link 1: Robert Goldbort, Ch. 2, "Laboratory Notes"

Reading Link 3: OpenStax – Discovering how populations change.

Due: 1st Draft – A Field Journal

Seminar 5: (Date) **Themes:** Scientists Writing for Scientists; Human origins and selecting an ancestor to research for a Review article.

Blackboard Reading 5: *Nature*, Dec. 2017 Review/Perspectives article. (Marshall, C.R. (2017) A tip of the hat to evolutionary change. *Nature* 532(7683) 35 – 37).

Reading Link 1: Robert Goldbort, Ch 3, "Workplace Scientific Writing"

Due: Revised Draft – A Field Journal

Seminar 6: (Date) **Themes:** Scientists Writing for Scientists; Formatting the Review article and assessing relationships in human ancestry.

Reading Link 1: Robert Goldbort, Ch. 9, "Scientific Journal Articles"**Reading Link 4:** OpenStax – Determining evolutionary relationships.

Seminar 7: (Date) **Themes:** Scientists Writing for Scientists; determining human ancestral relationships and fossil species.

Blackboard Reading 5: *Nature*, Dec. 2017 Review/ Perspectives article.

Reading Link 5: OpenStax – Speciation.

Seminar 8: (Date) **Themes:** Scientists Writing for Scientists; bibliographic documentation and challenges in evolutionary study.

Reading Link 1: Robert Goldbort, Ch. 9, “Scientific Journal Articles”.

Reading Link 6: OpenStax – Common misconceptions about evolution.

Due: 1st Draft: A Perspectives Article for the Journal Nature.

SPRING BREAK (Dates) (NO CLASSES)!

Seminar 9: (Date) **Themes:** Scientists Writing for Students/ Society; Darwin’s evidence of human origins.

Blackboard Reading 6: Charles Darwin, *The Descent of Man* – Introduction / Chapter 2. (*The Descent of Man, and Selection in Relation to Sex*, ed. J. Moore and A. Desmond (2nd ed, 1879; Penguin, 2004).

Reading Link 1: Robert Goldbort, Ch. 4, “Undergraduate Reports in the Sciences”

Due: Revised Draft – A Perspectives Article for the Journal Nature.

Seminar 10: (Date) **Themes:** Scientists Writing for Students/ Society; the phenomenon of culture and cultural evolution.

Blackboard Reading 7: Timothy H. Goldsmith, “Viewing Human Cultures in an Evolutionary Context”. (Goldsmith, T.H. & W. F. Zimmerman. (2000) *Biology, Evolution and Human Nature*, New Haven, CT: Yale University Press.)

Reading Link 1: Robert Goldbort, Ch. 6, “Scientific Visuals”

Seminar 11: (Date) **Themes:** Scientists Writing for Society; framing scientific essays for a general audience, and the impact of culture on biological evolution.

Blackboard Reading 8: Stephen J. Gould, “The Panda’s Thumb & Senseless Signs of History”. (Gould, S.J. (1982) *The Panda’s Thumb – More Reflections in Natural History*, New York, NY: W.W. Norton.)

Seminar 12: (Date) **Themes:** Scientists Writing for Society; the value of analogy/metaphor in scientific writing and evaluation of Gould’s writing style.

Blackboard Reading 8: Stephan J. Gould, “The Panda’s Thumb & Senseless Signs of History”. (Gould, S.J. (1982) *The Panda’s Thumb – More Reflections on Natural History*, New York, NY: W.W. Norton.)

Reading Link 1: Robert Goldbort, Ch. 5, “Documentation of Scientific Sources.

Due: *1st Draft – Essay for a Periodical.*

Seminar 13: (Date) **Themes:** Scientists Writing for Society; cultural evolution.

Blackboard Reading 9: Stephan J. Gould, “A Biological Homage to Mickey Mouse”. (Gould, S.J. (1982) *The Panda’s Thumb – More Reflections on Natural History*, New York, NY: W. W. Norton.)

Seminar 14: (Date) **Themes:** Scientists Writing for Society; innovative formatting in scientific writing – Socratic dialogue technique used in Altmann essay; concluding thoughts on the course..

Blackboard Reading 10: Stuart A. Altmann, “The Monkey and the Fig”. (Slatkin, M.(ed) (1995) *Exploring Evolutionary Biology, Readings from American Scientist*. Sunderland, MA: Sinauer Associates).

Due: *Final Draft – Essay for a Periodical.*
