

HPSC2018

History of Life Sciences

Syllabus

Session	2012-13
Web site	www.ucl.ac.uk/sts/cain/2018
Moodle site	moodle.ucl.ac.uk/course/view.php?id=8988
Timetable and location	www.ucl.ac.uk/timetable , <i>or</i> tinyurl.com/5t7u38t

Description

A historical survey of the biological sciences from the Enlightenment to the present. What are the major themes? Why do ideas and methods change so dramatically? This survey includes scientific theories, methods, and people. It also ties activities in biology to context. How does science relate to events elsewhere in society?

Key Information

Assessment	50%	essay (3,000 words)
	50%	exam
Prerequisites	none	
Required texts	readings listed below	

Module tutors

Module tutor	Professor Joe Cain
Contact	J.Cain@ucl.ac.uk t: 020 7679 3041
Web	www.ucl.ac.uk/sts/cain
Office location	22 Gordon Square, Room 1.1
Office hours:	Fridays 11:00-12:00 and by appointment

Assistant	Dr Tom Quick
Contact	to come
Office location	22 Gordon Square, Room B15
Office hours:	by appointment

Aims and objectives

Aims

HPSC2018 pursues several kinds of goals:

- develop content knowledge in the history and context of modern biology, we survey major themes, actors, and conceptual shifts. It also develops broader historical contexts
- broaden experience with STS-style investigations, we introduce major historiographical themes and interpretative techniques for engaging topics in the history of biology

Primary sources form one foundation of essential readings for this course so students may develop skills as assessors of original source materials: their reading, weighting, and critical assessment. Particular attention will be paid to helping students appreciate the many layers of meaning primary sources can come to have. To further develop skills in textual analysis and critical assessment, attention also will be paid to close reading of secondary materials from different types of sources.

Objectives

Related to historical content, by the end of this course students should be able to:

- identify major themes within the history of biology from the late 18thC to the 20thC
- connect conceptual developments with key historical actors and major historical contexts
- locate shifting centres and peripheries within the life sciences as well as evolving epistemologies

Related to transferrable key skills, this course seeks to develop basic skills central to historical research and analysis. Key will be developing abilities to do well what historians do every day. By the end of this course students also should be able to:

- distinguish between primary and secondary sources
- demonstrate skill in historical reasoning and comparative analysis
- approach new material from a historical perspective, with critical attention
- demonstrate an appreciation for the principle of historical contingency and for different historiographical approaches

We want to expand familiarity with the scholarly apparatus: documentation, format, and independent research. Improving writing skills — writing in prose that is clear, deliberate, and to the point — will be a goal of essay assignments.

Course plan

This module has three activities: lectures, essays, and an examination.

lectures

Lectures will consider key points of content and historiography relevant to identified themes. That also may include a critical discussion surrounding key issues or essential primary and secondary course readings. Students are encouraged to come to lecture having read and reflected on the essential readings on the schedule.

essay

One 3,000-word essay will be assigned.

In essays, we expect to see evidence of using not only the required readings in the course but also additional, complimentary materials. Bring to bear whatever resources you think may be applicable to your arguments; however, your submission must be solely and exclusively your own work.

Students may rewrite their essays following first marking provided the original is a serious attempt and was submitted prior to the deadline. Rewrites will be due on the first Friday of Term 3.

Support sessions will be provided for the essay, with information provided in lecture.

examination

This examination will place considerable emphasis on the required readings for the course, testing depth of knowledge and critical reading skills. All lecture material and required readings are fair game for examination. The format and domain for the examination will be discussed in lecture.

Prof Cain also will make available a "mock examination" for the course near the end of Term 2. This mock exam, and past exam papers, will be available through the course Moodle site.

A revision session will be set at the start of Term 3.

Students attending UCL only for Term 1 must contact Prof Cain prior to Reading Week to arrange alternative assessment in lieu of the examination.

Schedule

UCL Week	Topic	Date	Activity
wk06	Introduction: Inventing the Zoo	03 Oct	Ritvo (1996)
	Darwin and the <i>Origin</i>	05 Oct	Darwin (1859: 60-79)
wk07	Natural Theology	10 Oct	Gould (1990)
	Parisian Biology	12 Oct	Rehbock (1990)
wk08	Same or Different? (meet at Grant Museum)	17 Oct	Rupke (1993)
	Exploration and Empire	19 Oct	Frost (1988) Browne (1996)
wk09	Economic Biology	24 Oct	Carey (1814)
	Linnaeus and Taxonomy	26 Oct	Koerner (1996)
wk10	Collecting for the Rest of Us	31 Oct	Allen (1996) Kohlstedt (1990)
	Museums and Public Display	02 Nov	Secord (2004)
wk11	Reading Week	05-09 Nov	no lectures this week
wk12	Mendel and Mendelism	14 Nov	Hartl and Orel (1992)
	Mendelism and Eugenics	16 Nov	Gosney and Popenoe (1929)
wk13	Morgan and Genetics	21 Nov	Kohler (1999)
	Intervention and Vivisection	23 Nov	Tansey (1998)
wk14	New Biologies	28 Nov	Cain (2010)
	Experimental Taxonomy	30 Nov	Hagen (1999)
wk15	Essay due	03 Dec	Upload to Moodle by 24:00
wk15	Honest Jim	05 Dec	Watson (1968: 13-53) Wilson (1994: 218-237)
	Ecology and the Cold War	07 Dec	Hagen (1992: 100-121)
wk16	Paleobiology	12 Dec	Eldredge and Gould (1972) Gould and Eldredge (1977)
	Dinosaurs	14 Dec	Darley (2003)

Reading list

This is a complete list of *essential* readings. All these readings and course lectures are fair game for examination. Substitutions may be made during term. All readings are linked on Moodle. Some volumes also are available in the DMS Watson short loan collection.

- Allen, David. 1996. Tastes and Crazes. In *Cultures of Natural History*, ed. Jardine, Nicholas, James Secord and Emma C. Spary, pp. 394-407. Cambridge: Cambridge University Press. [book in DMS short loan collection **JAR**]
- Brockway, Lucile. 1979. Science and Colonial Expansion: The Role of the British Royal Botanic Gardens. New York: Academic Press, pp. 35-60.
- Browne, Janet. 1996. Biogeography and Empire. In *Cultures of Natural History*, ed. Jardine, Nicholas, James Secord and Emma C. Spary, pp. 305-321. Cambridge: Cambridge University Press. [book in DMS short loan collection **JAR**]
- Carey, William. 1814. Introduction. In *Hortus Bengalensis, or a Catalogue of the Plants Growing in the Honourable East India Company's Botanic Garden at Calcutta*, ed. Roxburgh, William, pp. i-xii. Calcutta: Mission Press. <www.wmcarey.edu/carey/hortus/hortus.htm>
- Darley, Andrew 2003. Simulating Natural History: Walking with Dinosaurs as Hyper-Real Edutainment. *Science as Culture* 12: 227-256.
- Darwin, Charles. 1859. *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* London: John Murray.
- Eldredge, Niles, and Stephen Jay Gould. 1972. Punctuated Equilibria: An Alternative to Phyletic Gradualism. In *Models in Paleobiology*, ed. Schopf, Thomas J. M., pp. 82-115. San Francisco: Freeman, Cooper and Company.
- Frost, Alan. 1988. Science for Political Purposes: European Explorations of the Pacific Ocean, 1764-1806. In *Nature in Its Greatest Extent*, ed. MacLoed, Roy and Philip Rehbock, pp. 27-44. Honolulu: University of Hawai'i Press.
- Gosney, Erza Seymour, and Paul Popenoe. 1929. Sterilization for human betterment: a summary of results of 6,000 operations in California, 1909-1929. New York: Macmillan. pp. v-xvi, 48-69, 116-135.
- Gould, Stephen Jay. 1990. Darwin and Paley meet the invisible hand. *Natural History* 1990 (11): 8-16. Reprinted in Stephen Jay Gould. 1994. *Eight little piggies* (London: Penguin), pp. 138-152. [book in DMS short loan collection **GOU**]
- Gould, Stephen Jay, and Niles Eldredge. 1977. Punctuated Equilibria: The Tempo and Mode of Evolution Reconsidered. *Paleobiology* 3: 115-151.
- Hagen, Joel. 1992. *An Entangled Bank: The Origins of Ecosystem Ecology*. New Brunswick, NJ: Rutgers University Press, pp. 100-121.
- Hagen, Joel B. 1999. Naturalists, Molecular Biologists, and the Challenges of Molecular Evolution. *Journal of the history of biology* 32 (2): 321-341.
- Hartl, Daniel L., and Vitezslav Orel. 1992. What Did Gregor Mendel Think He Discovered? *Genetics* 131: 245-253.
- Koerner, Lisbet. 1996. Carl Linnaeus in His Time and Place. In *Cultures of Natural History*, ed. Jardine, Nicholas, James Secord and Emma C. Spary, pp. 145-162. Cambridge: Cambridge University Press. [book in DMS short loan collection **JAR**]
- Kohler, Robert. 1999. Moral Economy, Material Culture and Community in *Drosophila* Genetics Research. In *The Science Studies Reader*, ed. Biagoli, Mario, pp. 243-257. New York: Routledge.
- Kohlstedt, Sally Gregory. 1990. Parlors, Primers, and Public Schooling: Education for Science in Nineteenth-Century America. *Isis* 81: 425-445.
- Rehbock, Philip F. 1990. Transcendental Anatomy. In *Romanticism and the Sciences*, ed. Cunningham, Andrew and Nicholas Jardine, pp. 144-160. Cambridge: Cambridge University Press.

- Ritvo, Harriet. 1996. The Order of Nature: Constructing the Collections of Victorian Zoos. In *New Worlds and New Animals: From Menagerie to Zoological Park in the Nineteenth Century*, ed. Hoage, R. J. and William Deiss, pp. 42-50. Baltimore: Johns Hopkins University Press. . [book in DMS short loan collection **HOA**]
- Rupke, Nicolaas A. 1993. Richard Owen's Vertebrate Archetype. *Isis* 84 (2): 231-251.
- Secord, James. 2004. Monsters at the Crystal Palace. In *Models: The Third Dimension of Science*, ed. de Chadarevian, Soraya and Nick Hopwood, pp. 138-169. Stanford: Stanford University Press.
- Tansey, E. Tilli. 1998. 'the Queen Has Been Dreadfully Shocked': Aspects of Teaching Experimental Physiology Using Animals in Britain, 1876-1986. *Advances in Physiology Education* 19: S18-S33.
- Watson, James D. 1968. *The Double Helix*. New York: Athenaeum, pp. 13-53.
- Wilson, E. O. 1994. *Naturalist*. New York: Time Warner, pp. 218-237.

Assessment

Summary

	Description	Deadline	Word limit
CW	Coursework	03 Dec 2012	3000 words
EX	Exam	Term 3	3 hours

Coursework

For the coursework, you have several options. Select one. Essays must be submitted via Moodle. *In extremis*, e-mail your essay to Prof Cain <j.cain@ucl.ac.uk> by the deadline.

option one: specific historical questions

Investigate one of the following subjects. Develop an appropriate thesis.

1. Gideon Mantell and his discovery of dinosaurs
2. Richard Owen's theory of archetype
3. Claude Bernard's influence on the history of physiology, especially through his (1865) *An introduction to the study of experimental medicine*
4. research produced by one of the following UCL's zoologists:
DMS Watson or Edwin Ray Lankester or Peter Medawar
5. TH Huxley's contributions to ethics
6. Frederick Clements' influence in ecology
7. Discoveries of the *HMS Challenger* expedition
8. Buffon and Cuvier's criticism of Linnaeus
9. Linnaeus's interest in applied science
10. Cuvier's theory of extinction and its evidential foundations
11. Charles Lyell's thinking about evolution
12. studies of the gorilla in 1850s and 1860s London
13. controversy over interpretations of Neanderthal fossils in the 19thC
14. anthropology at international exhibitions and world fairs
15. Walter Rothschild's major contributions to science
16. press discussions about vivisection and anti-vivisection circa 1900-1910
17. Robert Edmond Grant's research programme
18. George Perkins Marsh's 1864 *Man and nature* and its larger historical importance
19. Wilhelm Roux's (1894) discussion of the problems, methods, and scope of developmental mechanics
20. discoveries and adventures of William Beebe

option two: exploration and natural history

The following books are exemplars of natural history. Select one. Investigate its historical importance both as a source of factual knowledge and as an example of natural history as a research programme - something more than mere 'stamp collecting'.

- Meriwether Lewis and William Clark. 1803-1806. *Journals of the Lewis and Clark Expedition*
- Alexander von Humboldt. 1816. *Personal Narrative of Travels to the Equinoctial Regions of America, During the Year 1799-1804*
- Charles Darwin. 1839. *The Voyage of the Beagle*
- Alfred Russel Wallace. 1869. *Malay archipelago*

supporting information

Follow my requirements for essays, which are linked to the course Website. Locate your sources

early. Use libraries at UCL, Wellcome, and Senate House, as well as the UCL electronic library, such as the *Encyclopedia of Life Sciences* <www.els.net>. Avoid using tertiary texts, whether in print or on-line. Remember, your research and interpretative skills are being assessed, too. Essays should be approximately 3,000 words, excluding bibliography but including footnotes.

Criteria for assessment

The departmental marking guidelines for individual items of assessment can be found in the *STS Student Handbook*. The marking sheet I use for the coursework is posted on the Moodle site.

Important policy information

Below are listed some important points of policy. Further details of all these policies can be found in the STS Student Handbook <www.ucl.ac.uk/sts/handbook>

Late submission of coursework

Penalties for late coursework submission are as follows:

- loss of 5 marks for work submitted less than 24 hours late
- loss of 15 marks for work submitted between 1 and 7 days late
- loss of all marks (i.e. work is graded 0) if submitted more than 7 days late

These rules are statutory and non-negotiable.

Coursework word limits

Penalties for over-length coursework are as follows:

- Assessed work should not be more than 10% longer than the prescribed word count. Assessed work with a stated word count above this maximum cannot be accepted for submission, but will be immediately returned to the student with instructions to reduce the word length. The work may then be resubmitted, except insofar as penalties for late submission may apply.
- If submitted work is subsequently found to have an inaccurately stated word count, and to exceed the upper word limit by at least 10% and by less than 20%, the mark will be reduced by ten percentage marks, subject to a minimum mark of a minimum pass assuming that the work merited a pass.
- For work which exceeds the upper word limit by 20% or more, a mark of zero will be recorded.
- Footnotes and endnotes **do** count as part of the word limit
- Bibliography, tables, pictures and graphs **do not** count as part of the word limit.

Extensions

If unforeseeable circumstances prevent the completion of a piece of coursework, students may

Request an extension to the set deadline. Please consult the STS Student Handbook for further guidance on acceptable grounds for requesting an extension. Extensions must be negotiated in advance with the course tutor. Students to whom STS is parent department may also request an extension from their Personal Tutor. No extension is considered official without written approval.

The request for extension form can be found at: www.ucl.ac.uk/sts/study

Plagiarism

The *UCL Student Handbook* defines plagiarism as “the presentation of another person’s thoughts or words or artefacts or software as though they were [your] own”. Students are expected to know the College and Department policies in detail and to avoid even the appearance of inappropriate behaviour. In the first demonstrated instance of plagiarism or other irregularities in this course, students normally will receive a 0 F for the course and will be referred to the department and College officials for further action. All course work is subject to scrutiny against past papers and other materials for irregularities. Electronic and other checks will be conducted; see the *STS student handbook* for additional information.

Attendance

Regular attendance is expected.

Requirements to complete modules

Students are required to be 'complete' in all modules. Normally all assignments must be attempted in order for students to be considered complete. This is different from 'passing' a module which requires a minimum overall module mark of 40%.

Assessment and additional examiners

Assessed materials are marked by the course tutors. These provisional marks will be distributed to students at the first opportunity. To ensure fairness, materials subsequently are scrutinised by a second examiner within the Department, and a consensus is reached on these separate assessments. All assessed materials and the consensus marks are made available for scrutiny by an examiner external to UCL. Marks are considered final only after the Board of Examiners for Science and Technology Studies has approved them in their annual meeting near the close of Term three.

Disputed marks

Students must endeavour to discuss any grievances over marks informally with the course tutor in the first instance. If informal discussion fails to resolve the matter satisfactorily and there appears to be genuine and substantive grounds for appeal, the student should submit a written explanation of their grievance to the chair of the board of examiners. A final formal written appeal can be made to the College Registrar.

Mechanisms for student feedback

Students have a variety of means for commenting on the module and module tutor. These include written module evaluations at the end of term, regular lecture assessments offered by the module tutor, and in-session opportunities. Students are welcome to bring comments and criticisms to the module tutor in the first instance, by anonymous note if necessary, then to their personal tutor or the STS undergraduate tutor. The department schedules regular meetings of the Undergraduate Student Staff Consultative Committee to which all students are invited.