

HPSC2005: Philosophy of Biological Sciences



2011-12 session | Dr Brendan Clarke | b.clarke@ucl.ac.uk

Course Information

This course aims to give an introduction to the fundamental philosophical issues of post-Darwinian life sciences. The first half of the course deals with the broad conceptual themes of twentieth century biology. This begins by outlining the theoretical developments that led to the Modern Synthesis, before introducing a number of challenges to this viewpoint. These include the development of molecular biology, the rise of gene selectionism, and the more recent turn towards evolution and development (evo-devo) and epigenetics.

The second half of the course then deals with some special topics arising from these broad themes. These include theoretical discussions of the bauplan, questions about reductionism, issues related to classification, and to discussions about biodiversity. A detailed breakdown of the topics covered can be found below.

Basic course information

Course Web site: <https://www.ucl.ac.uk/silva/sts/staff/clarke/clarke-teach/2005>

Moodle Web site: Search "HPSC2005"

Assessment: One essay in Term 2 (40%)
One exam in Term 3 (60%)

Timetable: Term 2. [Common timetable link](#)

Prerequisites: No prerequisites, students must be Year 2 or Year 3. This course is designed to be complementary to other courses run in this department, particularly HPSC2020 (Revolutions in Medicine) and HPSC3027 (Evolution in Science and Culture).

Required texts: No textbook is set; required readings indicated below

Staff

Course tutor: Dr Brendan Clarke (course tutor)
Department of Science and Technology Studies, UCL

Contact: b.clarke@ucl.ac.uk | t: 020 7679 1328

Web: www.ucl.ac.uk/silva/sts/staff/clarke/

Office location: Room B14, 22 Gordon Square

Office hours: Tuesday 11-12
Thursday 11-12

Schedule

Week	Lecture theme	Date	Readings
1	Darwin and Mendel	13-Jan-2012	Garvey 2007, chapter 1; Sapp 1990
2	The Modern Synthesis and Population Genetics	20-Jan-2012	Sterelny and Griffiths 1999, chapter 2; Kevles 1980
3	Molecular Mendelianism and the Selfish Gene	27-Jan-2012	Sterelny and Griffiths 1999, chapters 4 and 6.2ff
4	Evo-devo and Epigenetics	03-Feb-2012	Sterelny and Griffiths 1999, chapter 5; Jablonka and Lamb 2005, chapter 7
5	Adaptionism versus the Bauplan	10-Feb-2012	Sterelny and Griffiths 1999, chapter 10
	Reading Week	17-Feb-2012	
6	Altruism and the Units of Selection	24-Feb-2012	Axelrod and Hamilton 1981; Lloyd 2005
7	Genes, Organisms, Supraorganisms [Anti-Reductionism]	2-Mar-2011	Sterelny and Griffiths 1999, chapters 7 and 8
8	Species	9-Mar-2011	Sterelny and Griffiths 1999, chapter 9; Dupré 2001
9	Synthetic biology	16-Mar-2011	O'Malley et al. 2007; Endy 2005
10	Diversity and Disparity	23-Mar-2011	Gould 1991
	Essay 2 deadline	22-Mar-2011	

Essay

Summary

	Description	Deadline	Word limit
Essay	Research project	11.59pm Thurs 22-Mar-2012	4000 (3000 suggested)

Assignments

The written assessment for this course is one sustained, analytical essay on a research topic of your choosing. This will therefore prioritise your synthetic skills, and your ability to formulate and defend a convincing argument.

Due Dates and Role in Final Mark

The essay is due no later than **22nd March 2012**, before midnight.

Essays must be submitted through the [Moodle](#) service. In extremis, the essay may be submitted via e-mail to <b.clarke@ucl.ac.uk> as an attachment. Your essay must be compatible with MS Word 2003 or Adobe Acrobat 7.0.

The essay contributes **forty percent** to the final course mark. You are encouraged to discuss your ideas with the course tutor. Do this well in advance of the deadline. No rewriting is available.

Notes for Guidance

I encourage you to discuss your essay with me well in advance of the due date. Best to e-mail and make an appointment. Your research should begin with readings for this course, but must include more sources than this. You are welcome to use Web-based resources but use them critically. Include primary sources. Citations should follow my guidance, both for printed and Web sources. Links to both are on the course Moodle page.

Remember the policies about academic dishonesty and irregularities, especially plagiarism.

Penalties for late submission follow departmental policy as described in the *STS student handbook*. Course work must be submitted via Moodle service. No mark will be accepted for an essay unless it has been subjected to this scrutiny. No coursework will be accepted after the first Friday of Term 3, except *in extremis*.

It is the student's responsibility to obtain assignments, to meet deadlines, and to clarify any ambiguities that arise. If in doubt, ask. Students who cannot access my requirements and guidelines on-line should obtain a copy from me.

To apply for an extension to the set deadline for an assignment, students must submit a "request for extension of course work" form, available in the departmental office, via the STS Web site, and via the course Web site. This request should be submitted, with documentation, to the course tutor in first instance. If confidential issues are involved, submission of the extension request and documentation may be made through a student's personal tutor or the STS undergraduate tutor. Requests should be made in advance of the set deadline, when possible. Submission of a request is no guarantee of approval. Normally, I only agree to extensions in the case of documented serious medical conditions or other grave circumstance. For instance, having a cold on one day is not sufficient.

Marks will follow the departmental criteria for assessment. In sum, essays will be assessed on the following terms:

- the depth of scholarship and use of resources beyond those in lecture and required reading
- the ability to identify both major and subtle points of the subject
- the extent of your critical assessment, and the strength of your arguments
- the evidence you provide for having reflected on and extended course content and themes
- the general scholarly presentation of the work performed

My most common criticisms on student essays relate to:

- too much description/summary of readings and not enough analysis
- not developing your own argument
- no evidence of independent research
- terrible organisation and poor referencing techniques
- use of only one source or poor choice of sources (such as the *Encyclopaedia Britannica* or *Wikipedia*)

Research tools

Discuss your research with reference librarians at UCL, the Wellcome Library, and Senate House. I also encourage you to use research tools in MetaLib, including the History of Science, Technology and Medicine database. More information is available on the Moodle page.

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.

Extensions

If you think you will find it difficult to produce your essay on time, please come and discuss it with me. Extensions may be available. However, these **must** be negotiated with me in advance. As the student handbook says:

‘Students may request an extension to the set deadline for a piece of course work if medical, family, and other personal circumstances intervene to prevent completion of assigned work. Extension requests must not be used as a crutch for poor time management or a failure to begin work sufficiently early to complete an assignment on time. The demands of outside employment are not sufficient grounds for an extension. Plan ahead. No extension is considered official without a written approval.’

The request for Extension form can be found at:

http://www.ucl.ac.uk/sts/study/bsc/documents/request_for_extension.pdf

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.

In light of these restrictions, I have been extremely generous with the word limits suggested for the coursework, and I suspect that it will be possible to write an excellent essay without exceeding – or even matching – it. Please come and discuss with me if you feel that it will be difficult to adequately discharge your work while remaining within these limits.

Examination

This will be a closed book, three hour examination in term three. It contributes **sixty percent** towards the final course mark. A sample exam paper will be made available towards the end of term two. Regulations and so on will be as per the student handbook.

Points of Policy

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

I follow the policy set by the *STS student handbook*. I expect students to attend lectures regularly and to contribute actively in the course.

Referral and re-sits

Students who fail this course have two options, depending on the final mark:

Students achieving a final course mark below F+ normally have the right to make a re-entry at the next available opportunity. This involves repeating all assessed components of the course.

Students achieving a final course mark in the range F+ may be allowed the option of referral, at the discretion of the board of examiners. A referral normally involves written work set over summer. Successful completion of a referral earns the student a minimum passing mark.

Requirements to complete HPSC2005

Student will complete the course normally only after having (1) submitted a serious attempt at the essay, and (2) attempting the examination.

Assessment and additional examiners

Assessed materials are marked by the course tutor. 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 are strongly advised in the first instance to discuss and resolve any grievances over marks informally with the course tutor. 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 course and course tutor. These include written course evaluations at the end of term, regular lecture assessments offered by the course tutor, and anonymous Web comment boxes. Students are welcome to bring comments and criticisms to the course tutor in the first instance, by anonymous note if necessary, then to their personal tutor or the undergraduate tutor. The department schedules regular meetings of the Undergraduate Student Staff Consultative Committee to which all students are invited.

Reading List

This is a complete list of required readings. There's no official set textbook for the course. However, most of the required readings are taken from Sterelny, K. and Griffiths, P. 1999. *Sex and Death: An Introduction to Philosophy of Biology*. 2nd ed. Chicago, IL: Chicago University Press. If you would like to buy a copy, it's reasonably inexpensive (about £18) and should be fairly easy to obtain. Otherwise there are a number of copies in the Science library.

Required reading not in Sterelny and Griffiths will be distributed via Moodle in advance of the session. All required readings, course lectures, and tutorials are fair game for examination. Substitutions may be made during term.

Axelrod, R. and Hamilton, W.D. 1981. The Evolution of Cooperation. *Science*, **211**(4489): 1390-6.

Endy, D. 2005. Foundations for engineering biology. *Nature*, 438(7067): 449-53.

Garvey, B. 2007. *Philosophy of Biology*. Stocksfield: Acumen.

Gould, S.J. 1991. The Disparity of the Burgess Shale Arthropod Fauna and the Limits of Cladistic Analysis: Why We Must Strive to Quantify Morphospace. *Paleobiology*, **17**(4): 411-23.

Jablonka, E. and Lamb, M. 2005. *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioural and Symbolic Variation in the History of Life*. Cambridge, MA: MIT Press.

Kevles, D.J. 1980. Genetics in the United States and Great Britain, 1890-1930: A Review with Speculations. *Isis*, **71**(3): 441-55.

Lloyd, E. 2005. *Units and Levels of Selection*. Stanford Encyclopedia of Philosophy. Available online at <http://plato.stanford.edu/entries/selection-units/>.

O'Malley, M.A., Powell, A., Davies, J.F. & Calvert, J. 2007. Knowledge-making distinctions in synthetic biology. *BioEssays*, **30**: 57-65.

Sapp, J., 1990. The Nine Lives of Gregor Mendel. In H. E. Le Grand, ed. *Experimental Inquiries*. Kluwer Academic Publishers, pp. 137-66. Available online at: <http://www.mendelweb.org/MWsapp.html> [Accessed August 11, 2010].

Sterelny, K. and Griffiths, P. 1999. *Sex and Death: An Introduction to Philosophy of Biology*. 2nd ed., Chicago, IL: Chicago University Press.