



Department of History

HTST 476 (3 credits)

History of Science: “A Cultural History of the Biomedical Sciences”

Winter 2020

Instructor: Prof. Frank W. Stahnisch
Tues & Thurs: 14:00 p.m. – 15:15 p.m.
Room ST 055 Science Theatres

Contact:

fwstahni@ucalgary.ca
Departments of History & Community Health Sciences
Social Sciences Building, Room 606
2500 University Drive N.W.
(403) 210-6290

Office hours:

Thursday, 10:50-12:20 p.m.
(Location: SS 606, Dep't. of History)

Course Librarian: Nadine Hoffmann (nadine.hoffman@ucalgary.ca)

Course Outline:

The modern biological and biomedical sciences have received great academic, social, and economic interest since the latter half of the 20th century. Extensive optimism is placed on the medical (e.g. genetic engineering), agricultural (e.g. nutritional science), and economic (e.g. pharmacological applications) prospects that have come to be associated with experimental biology and medical research. However, this cultural prominence of the biomedical sciences is a most recent development, since even for most parts of the 20th century the field of physics (atomic physics) as *the* model of a “hard science” was widely perceived as the leading discipline, while biology and medicine were only regarded as “soft or applied sciences.” When the perspective is taken back to the period of the “Scientific Revolution” and the “Early Modern Times,” then it becomes visible that biological research and education had largely been pursued from an angle of natural philosophy or as auxiliary subjects contributing to a university medical education. In this advanced undergraduate seminar, we will consider the development of the biological and biomedical sciences from the times of the Italian anatomist Andreas Vesalius (1514-1564)

and the European Renaissance to modern industrialized research activities and the “Information Revolution” of the 20th century, which saw the rise of genetics, molecular biology, and neuroscience. This advanced undergraduate course explores changing concepts and ideas about “life,” “biology,” and “medicine” during 500 years. By looking at the ways how living phenomena had been observed, interpreted and manipulated throughout the history of the modern biomedical sciences, various issues regarding natural history collections, taxonomy, evolution, physiological determinism, reproduction, and consciousness are analyzed in their contingent scientific and cultural contexts.

Learning Objectives:

(1) through lectures, discussions, presentations, and structured research, an academic forum will be provided for the appreciation of differences in the validation, construction, and contestation of forms of biomedical ways of knowing;

(2) to analyze important issues and discourses in multiple practices of research and learning in biomedicine as they undergird and intersect conceptions of regionalism, gendered, classed, and ethnic voices, multiculturalism, positivism, religion and secularization, media perceptions, and popular culture and consciousness;

(3) to help equip students with useful academic tools and background knowledge necessary for a critical, clear, and effective evaluation of the dynamics of the humanistic, sociological, and natural science context of modern biomedicine;

(4) to explore the interdisciplinary meanings of biology, medicine, and health care in light of scholarly forms of positioning from the “Scientific Revolution” to the modern-day “Science Wars;”

(5) to encourage curiosity for the importance of elaborate argumentation over personal and public opinion in the wider context of the history of biomedicine. The intellectual foundations of this course encourage participants to also critically challenge their own pre-conceived notions, ideas, conceptions, and biases;

(6) to enable students to understand more clearly the uses and misuses of biomedical knowledge in policy-making, legal contexts, judicial settings, and public debates.

Evaluation:

Seminar participation (incl. 4 quizzes):	20%
Oral presentations (incl. 10 min. presentation):	30%
Final paper:	50%

Course Requirements / Evaluation:

The assignments in the course are based on active participation (including 4 quizzes of 10 min. worth 2,5% each) in the course – and includes attendance and regular contributions to discussions –, one brief oral presentation (as a group presentation by two students worth 15%) and one final term paper. The 15-page essay (of about 4,000 words, excl. endnotes), which students are required to write on a topic related to the course, is due on Tuesday April-14, 2020). Late assignments will be subject to a 5% penalty per day late. For advice and guidance in writing essays, please read “The History Student’s Handbook” (<https://hist.ucalgary.ca/sites/hist.ucalgary.ca/files/history-students-handbook-2019.pdf>) or go to the History Department’s Homepage (<https://hist.ucalgary.ca>). Be sure to read the section on plagiarism carefully and observe that you give proper credit to the sources of your work. The policy at the UofC is that all allegations of plagiarism will be reported to the Associate Dean of Students who will rule on the allegations and apply the penalties in the course calendar. Academic dishonesty is a serious offence that can lead to a failing grade and/or expulsion from the University. The essential readings for this course will be available online from the electronic databases of the UofC Library; more material (such as links to literature and TFDL materials) will be offered through D2L. Those students who are interested in additional in-depth studies can buy the relevant books at the UofC Bookstore, where most of them are being made available.

Students are requested to:

Purchase the following books (UofC Bookstore:
<https://www.calgarybookstore.ca/default.asp?>)

The History of Life: A Very Short Introduction, by Michael J. Benton (Oxford: Oxford University Press 2008)

Wonders and the Order of Nature, 1150-1750, ed. by Lorraine J. Daston and Katherine Park (Chicago: University of Chicago Press 1998)

A Cultural History of Heredity, by Staffan Mueller-Wille and Hans-Joerg Rheinberger (Chicago: University of Chicago Press 2012)

The Epic History of Biology, by Anthony Serafini (New York: Basic Books, 2001)

The required readings are extremely important; students will be asked questions about them during the course.

COURSE CALENDAR & READINGS SCHEDULE

January, 6-10 BLOCKWEEK: NO CLASS!!

Tues, 14 Jan.: Course Introduction – “Wonderful Life”

Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 1-14.

PART 1. ANATOMY AND NATURAL HISTORY IN THE RENAISSANCE AND EARLY MODERN PERIOD

Thurs, 16 Jan.: Changes in Natural History and the Scientific Revolution

Lorraine J. Daston and Katherine Park, *Wonders and the Order of Nature, 1150-1750* (Chicago, University of Chicago Press 1998), pp. 21-67.

Tues, 21 Jan.: Anatomy during the Italian Renaissance

Lorraine J. Daston and Katherine Park, *Wonders and the Order of Nature, 1150-1750* (Chicago, University of Chicago Press 1998), pp. 255-302.

Thurs, 23 Jan.: The “Founder of Modern Anatomy:” Andreas Vesalius (1515-1564)

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 75-88.

Tues, 28 Jan.: Networks of Botany and the Place of Naturalistic Collections

Emma C. Spary, “‘Peaches which the Patriarchs Lacked:’ Natural History, Natural Resources and the Natural Resources in France”, *History of Political Economy* 35 (2003), pp. 14-45.

Thurs, 30 Jan.: Wonder Chambers during the Early Modern Period

Lorraine J. Daston and Katherine Park, *Wonders and the Order of Nature, 1150-1750* (Chicago, University of Chicago Press 1998), pp. 329-364.

PART 2. FROM ROMANTICISM AND NATURPHILOSOPHIE TO EXPERIMENTAL SCIENCE IN THE NINETEENTH AND TWENTIETH CENTURY

Tues, 4 Feb.: The Systemae Naturae

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 89-102.

Thurs, 6 Feb.: Georges Cuvier (1769-1832), Comparative Anatomy, and Palaeontology

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 139-170.

Tues, 11 Feb.: Friedrich Schelling (1775-1845) and the Beginnings of Naturphilosophie

Timothy Lenoir, 'Kant, Blumenbach, and Vital Materialism in Germany', *Isis* 71 (1980), pp. 77-108.

Thurs, 13 Feb.: The Birth of "Biology" – Embryology, Cell Theory and Physiology

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 111-116.

February, 16-22 READING WEEK: NO CLASS!!

Tues, 25 Feb.: Johannes Mueller's (1801-1859) Lab – The School of Physical Physiologists

Laura Otis, 'The Metaphoric Circuit: Organic and Technological Communication in the Nineteenth Century', *Journal of the History of Ideas* 63 (2002), pp. 105-128.

Thurs, 27 Feb.: French Physiology: From Neurological Ablation Experiments to Clinical Cinematography

Frank W. Stahnisch, 'Historical and Philosophical Perspectives on Experimental Practice in Medicine and the Life Sciences', *Theoretical Medicine and Bioethics* 26 (2005), pp. 397-425.

Tues, 3 March: Charles Darwin (1809-1882) and the Theory of Human Evolution

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 209-232.

Thurs, 5 March: Early Darwinian Controversies and the Rise of Social Darwinism

Anthony Serafini, *The Epic History of Biology* (New York: Basic Books, 2001), pp. 233-248.

PART 3. FROM EXPERIMENTAL PHYSIOLOGY TO THE HUMAN GENOME PROJECT IN THE TWENTIETH CENTURY

Tues, 10 March: Reviving Gregor Mendel (1822-1884): The Development of Experimental Genetics

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 127-160.

Thurs, 12 March: Scientific Medicine, Urbanization, and Degeneration Discourses

Hans-Joerg Ritter and Volker Roelcke, 'Psychiatric Genetics in Munich and Basel between 1925 and 1945: Programs – Practices – Cooperative Arrangements', *Osiris* 20 (2005), pp. 263-288.

Tues, 17 March: Racial Anthropology and the Early Eugenics Movement

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 95-126.

Thurs, 19 March: “Laboratory Disease,” Experimental Thought Styles and Biological Warfare

Christoph Gradmann, ‘Money and Microbes. Robert Koch, Tuberculin and the Foundation of the Institute for Infectious Diseases in Berlin in 1891’, *History and Philosophy of the Life Sciences* 22 (1996), pp. 59-79.

Tues, 24 March: Public Health Experimentation: The Case of Radium Dial Workers and Industrial Health Implications

Maria Rentetzi, ‘The U.S. Radium Industry In-House Research and the Commercialization of Science’, *Minerva* 46 (2008), pp. 437-462.

Thurs, 26 March: From the Discovery of DNA to the Human Genome Project

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 161-186.

Tues, 31 March: Medicine as a Commodity: Biobanks, Stem Cells, and the Influences of Big Pharma

Staffan Mueller-Wille and Hans-Joerg Rheinberger, *A Cultural History of Heredity* (Chicago: University of Chicago Press 2012), pp. 187-219.

Thurs, 2 April: Student Presentations I

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

Tues, 7 April: Student Presentations II

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

Thurs, 9 April: Student Presentations III

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

Tues, 14 April: Student Presentations IV

Brief (ten min.) student presentations (in groups of two) regarding themes related to the topics of the HTST477 classes / Michael J. Benton *The History of Life. A Very Short Introduction* (Oxford: Oxford University Press 2008), pp. 146-166.

Written Assignment:

Term paper (15 pp, 12pt, 1,5-spaced, 4,000 words max., excl. endnotes & bibliography)!

[End of Teaching Session on Wednesday, April-15 / Term Paper: April-14, 2020 / Red Box Policy]

Departmental Grading System:

The following percentage-to-letter grade conversion scheme is used in all Canadian Studies, History, and Latin American Studies courses, except for HTST 200.

Percentage	Letter Grade	Grade Point Value	Description
90-100	A+	4.00	Outstanding performance
85-89	A	4.00	Excellent performance
80-84	A-	3.70	Approaching excellent performance
77-79	B+	3.30	Exceeding good performance
73-76	B	3.00	Good performance
70-72	B-	2.70	Approaching good performance
67-69	C+	2.30	Exceeding satisfactory performance
63-66	C	2.00	Satisfactory performance
60-62	C-	1.70	Approaching satisfactory performance.
56-59	D+	1.30	Marginal pass. Insufficient preparation for subsequent courses in the same subject
50-55	D	1.00	Minimal Pass. Insufficient preparation for subsequent courses in the same subject.
0-49	F	0	Failure. Did not meet course requirements.

Program Advising and Student Information Resources:

- For program advising in the Faculty of Arts, contact the Arts Students Centre (ASC) in SS 102, call 403-220-3580, email artsads@ucalgary.ca, or book an appointment with an ASC advisor at <https://arts.ucalgary.ca/current-students/undergraduate>.
- For further information on academic advising and degree planning for arts students, see <https://arts.ucalgary.ca/current-students/undergraduate/academic->

[advising](#).

- For registration issues, paying fees, and assistance with MyUofC, contact Enrolment Services in MacKimmie Tower Room 116, call 403-210-ROCK (7625), or visit <http://www.ucalgary.ca/registrar/>.
- **Attention history majors:** History 300 is a required course for all history majors. You should normally take it in your second year.
- Registration Changes and Exemption Requests: <https://www.ucalgary.ca/registrar/registration/appeals>

Writing:

All written assignments and written exam responses are assessed partly on writing skills. Writing skills include surface correctness (grammar, punctuation, sentence structure, etc.) and general clarity and organization. Research papers must be properly documented according to the format described in the History Student's Handbook.

D2L: Throughout the course, important material such as lecture outlines and study guides will be regularly posted on D2L. Students are advised to check this regularly.

Red Box Policy:

If your instructor requires paper copies of an essay and/or assignment, and the essay/assignment can be handed in outside of class, you can drop them in the red box located outside of the History Department office (Social Sciences, Room 656). Please include the following information on your assignment: 1) **course name and number, 2) instructor, 3) your name, and 4) your student number**. Assignments received after 4:00 p.m. are date stamped the next business day. We do not time stamp any papers. Please do not bring your paper into the office to be stamped. The box is emptied at 4:00 p.m. Monday to Friday.

Plagiarism:

Plagiarism occurs when one submits or presents one's work in a course, or ideas and/or passages in a written piece of work, as if it were one's own work done expressly for that particular course, when, in fact, it is not. Please see [The History Student's Handbook](#). Plagiarism may take several forms:

- Failing to cite sources properly
- Submitting borrowed, purchased, and/or ghostwritten papers
- Submitting one's own work for more than one course without the permission of the instructor(s) involved
- Extensive paraphrasing of one or a few sources, even when referenced properly, unless the essay is a critical analysis of those works

Plagiarism is a serious academic offence, and written work that appears to contain plagiarized passages will not be graded. All such work will be reported to the Faculty of Art's associate deans of students who will apply the penalties specified in the *University of Calgary Calendar*, [Section K](#).

Academic Accommodations:

The student accommodation policy can be found at: ucalgary.ca/access/accommodations/policy.

Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services (<https://www.ucalgary.ca/access/>) in accordance with the Procedure for Accommodations for Students with Disabilities ucalgary.ca/policies/files/policies/student-accommodation-policy.

Students needing an accommodation based on a protected ground other than disability should contact, preferably in writing, the course instructor.

Copyright:

The University of Calgary has opted out of the Access Copyright Interim Tariff proposed by the Copyright Board. Therefore, instructors in all University of Calgary courses will strictly adhere to Copyright Act regulations and the educational exceptions permitted by the Act for both print and digital course material. No copyrighted material may be placed on course D2L or web sites without the prior permission of the copyright holders. In some cases, this may mean that instructors will require you to purchase a print course pack from the University of Calgary bookstore or consult books on reserve at the library. For more information on the University of Calgary's copyright policy, see <http://library.ucalgary.ca/copyright>.

Other Useful Information:

- Department Twitter @ucalgaryhist

Please see <https://www.ucalgary.ca/registrar/registration/course-outlines> for information on:

- Wellness and Mental Health
- Student Success
- Student Ombuds Office
- Student Union (SU) Information
- Graduate Students' Association (GSA) Information
- Emergency Evacuation/Assembly Points
- Safewalk

Winter 2020