

HTST 372 (3 credits)
**History of Science: “Ways of Knowing –
Science, Technology, and Medicine
in Historical Perspectives”**

Winter 2017

Instructor: Prof. Frank W. Stahnisch
Tues & Thurs: 11:00 a.m. – 12:15 p.m.
Room EDC156 Education Classroom Block

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, 14:00 p.m.-15:30 p.m.
(Location: SS 606, Dep’t. of History)

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

Course Outline:

This undergraduate course surveys the history of science, technology, and medicine not primarily from a chronological perspective. It rather follows particular ways of knowing into their histories from 1500 to the present, in order to examine how the layers of knowledge and knowledge generation changed, and how they intersected and grew over the centuries. A transnational examination of the relationships among these ways of knowing in their historical and cultural contexts will be provided, together with an introduction into major theories in the historiography of the field of Science, Technology, and Medicine. The course addresses related history of science issues in a novel way and wants to present these to students from wider interdisciplinary backgrounds. It explores and discusses the history of Science, Technology, and Medicine not with respect to each scientific discipline, but from distinct “ways of knowing” that shall be put into their respective historical and cultural contexts. Primarily, six different ways of knowing shall be covered: “ways of world reading,” “natural history,” “analyses,” “syntheses,” “experimentalism,” and “technoscience.” Within each of the usually two-week blocks, there is some information from five centuries from the Renaissance to the modern sciences of our time that will be put in their local historical contexts as well as discussed through considering their often *longue durée* in the history of Science, Technology, and Medicine. Furthermore, this course shall also introduce major historiographical interpretations, as put forward by eminent historians of science and medicine, such as Ludwik Fleck (1896-1961), Alexandre Koyré (1892-1964), George Canguilhem (1904-1995), and Thomas S. Kuhn (1922-1996), among others.

Evaluation:

Seminar participation (incl. 4 quizzes):	20%
Midterm exam	30%
Term paper:	50%

Midterm Exam: Thursday, February 16

This will be an in-class exam encompassing all material covered in the text readings and lectures up to this point.

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, a midterm exam (worth 30%), 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 Thursday (April-20, 2017). 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” (http://hist.ucalgary.ca/sites/hist.ucalgary.ca/files/history_students_handbook_2015.pdf) or go to the History Department’s Homepage (<https://hist.ucalgary.ca/>). Be sure to read the section on plagiarism (p. 13f.) 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 course textbooks and required readings are listed below. Further 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 Desire2Learn (D2L).

Students are requested to:

Purchase the following books (UofC Bookstore: <http://calgarybookstore.ca>)

Barry Barnes, David Bloor, and John Henry, *Scientific Knowledge: A Sociological Analysis* (Chicago: University of Chicago Press, 1996)

Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010)

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001)

Steven Shapin, *Never Pure: Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture and Society, and Struggling for Credibility and Authority* (Baltimore: Johns Hopkins University Press, 2010)

COURSE CALENDAR & READINGS SCHEDULE

January, 2-6 BLOCKWEEK: NO CLASS!!

Tues, 10 Jan: Course Introduction – “Ways of Knowing”

Barry Barnes, David Bloor, and John Henry, *Scientific Knowledge: A Sociological Analysis* (Chicago: University of Chicago Press, 1996), pp. 1-17.

1. WAYS OF WORLD READING

Thurs, 12 Jan: Meanings and Readings

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 33-45.

Tues, 17 Jan: Revolution, Respectability, and Dis-Enchantment

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 45-59.

Thurs, 19 Jan: “The Mind is its Own Place”

Steven Shapin, *Never Pure: Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture and Society, and Struggling for Credibility and Authority* (Baltimore: Johns Hopkins University Press, 2010), pp. 119-141.

Tues, 24 Jan: Before “Objectivity”

Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), pp. 55-62.

2. WAYS OF NATURAL HISTORY

Thurs, 26 Jan: “Historia” and Representation

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 60-72.

Tues, 31 Jan: Natural Empires

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 73-82.

Thurs, 2 Feb: Taming Nature’s Variability

Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), pp. 63-83.

Tues, 7 Feb: Drawing from Nature

Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), pp. 98-114.

3. WAYS OF ANALYSES

Thurs, 9 Feb: The Idea of Analysis

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 83-88.

Tues, 14 Feb: Rationalization and Forms of Analyses

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 89-105.

Thurs, 16 Feb: Midterm Exam

[The written exam takes place in the normal classroom.]

February, 19-26 MID-TERM BREAK: NO CLASS!!

Tues, 28 Feb: René Descartes – The “Doctor”

Steven Shapin, *Never Pure: Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture and Society, and Struggling for Credibility and Authority* (Baltimore: Johns Hopkins University Press, 2010), pp. 351-374.

Thurs, 2 March: The Elements of Earth, Bodies, and Societies

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 106-134.

4. WAYS OF SYNTHESSES

Tues, 7 March: Synthesis in Chemistry

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 139-145.

Thurs, 9 March: Research Schools and Disciplined Thinking

Maurice Crosland, “Research Schools of Chemistry from Lavoisier to Wurtz,” *The British Journal for the History of Science* 36, no. 3 (2003), pp. 333-361.

Tues, 14 March: Early Synthetic Pharmaceuticals

John E. Lesch, “Conceptual Change in an Empirical Science: The Discovery of the First Alkaloids,” *Historical Studies in the Physical Sciences* 11, no. 2 (1981), pp. 305-328.

Thurs, 16 March: “Who is the Industrial Scientist?”

Steven Shapin, *Never Pure: Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture and Society, and Struggling for Credibility and Authority* (Baltimore: Johns Hopkins University Press, 2010), pp. 212-234.

5. WAYS OF EXPERIMENTALISM

Tues, 21 March: The House of Experiment

Steven Shapin, *Never Pure: Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture and Society, and Struggling for Credibility and Authority* (Baltimore: Johns Hopkins University Press, 2010), pp. 59-88.

Tues, 23 March: Robert Boyle's Air Pump

Steven Shapin, *Never Pure: Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture and Society, and Struggling for Credibility and Authority* (Baltimore: Johns Hopkins University Press, 2010), pp. 89-116.

Thurs, 28 March: Experimentation in the Physical Sciences

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 146-161.

Tues, 30 March: Interpretation and Experiment

Barry Barnes, David Bloor, and John Henry, *Scientific Knowledge: A Sociological Analysis* (Chicago: University of Chicago Press, 1996), pp. 18-46.

6. WAYS OF TECHNOSCIENCE

Thurs, 4 April: Science, Technology, Medicine, and the State

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 162-177.

Tues, 6 April: “Reason as a Gun for Hire?” – Science in the World Wars

John V. Pickstone, *Ways of Knowing – A New History of Science, Technology, and Medicine* (Chicago: University of Chicago Press, 2001), pp. 178-188.

Thurs, 11 April: Seeing is Making – From Microscopy to “Nanofactory”

Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), pp. 382-411.

Written Assignment:

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

[End of Teaching Session on Wednesday, April-12 / Term Paper: Thursday, April-20, 2016 (4 p.m. History Dep't. Red Box)]

Important Departmental, Faculty, and University Information

Faculty of Arts Program Advising and Student Information Resources:

- Have a question, but not sure where to start? The Arts Students Centre is your information resource for everything in Arts! Drop in at SS110, call 403-220-3580, or email artsads@ucalgary.ca. For detailed information on common academic concerns, you can also visit the Faculty of Arts website at <http://arts.ucalgary.ca/undergraduate>.
- For program planning and advice, contact the Arts Students Centre, Social Sciences 102, 403-220-3580, or visit <http://arts.ucalgary.ca/advising>.
- For registration (add/drop/swap), paying fees and assistance with your Student Centre, contact Enrolment Services at 403-210-ROCK [7625] or visit the office in the MacKimmie Library Block.

Departmental Twitter Handle @ucalgaryhist - For departmental updates and notifications

Writing:

This course will include written assignments. Faculty policy directs that all written assignments (including, although to a lesser extent, written exam responses) will be assessed at least partly on writing skills. Writing skills include not only surface correctness (grammar, punctuation, sentence structure, etc.) but also general clarity and organization. Research papers must be properly documented.

Writing Support:

Students are also encouraged to use Writing Support Services and other Student Success Centre Services, located on the 3rd floor of the Taylor Family Digital Library. Writing Support Services assist with a variety of assignments, from essays to lab reports. Students can book 30-minute one-on-one appointments online, sign up for 15-minute drop-in appointments, and register for a variety of writing workshops. For more information on this and other Student Success Centre services, please visit www.ucalgary.ca/ssc.

Copyright:

The University of Calgary has opted out of the Access Copyright Interim Tariff proposed by the Copyright Board. This means that 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. What this simply means is that 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 that you will have to consult books on reserve at the library. For more information on the University of Calgary's copyright policy, see <http://library.ucalgary.ca/copyright>.

Red Box Policy:

Essays and other assignments may be handed in to the red box located outside of the History Department office (SS 656). Please include the following information on your assignment: course name and number, instructor, your name and your student number. Assignments received after 4:00 p.m. will be date stamped with the date of 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 promptly at 8:30 a.m. and at 4:00 p.m. Monday to Friday.

Departmental Grading System:

The following percentage-to-letter grade conversion scheme has been adopted for use in all Canadian Studies, History, and Latin American Studies courses.

Percentage	Letter Grade	Grade Point Value	Description
90-100	A+	4.00	Outstanding
85-89	A	4.00	Excellent—superior performance showing comprehensive understanding of subject matter.
80-84	A-	3.70	
77-79	B+	3.30	
73-76	B	3.00	Good—clearly above average performance with knowledge of subject matter generally complete.
70-72	B-	2.70	
67-69	C+	2.30	
63-66	C	2.00	Satisfactory—basic understanding of the subject matter.
60-62	C-	1.70	Receipt of a grade point average of 1.70 may not be sufficient for promotion or graduation.
56-59	D+	1.30	Minimal pass—marginal performance; generally insufficient preparation for subsequent courses in the same subject.
50-55	D	1.00	
0-49	F	0	Fail—unsatisfactory performance or failure to meet course requirements.

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. As noted in *The History Student's Handbook* (http://hist.ucalgary.ca/sites/hist.ucalgary.ca/files/history_students_handbook_2015.pdf), plagiarism may take several forms:

- Failure to cite sources properly may be considered plagiarism. This could include quotations, and wording used from another source but not acknowledged.
- Borrowed, purchased, and/or ghostwritten papers are considered plagiarism, as is 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 is also considered plagiarism, even when notes are used, unless the essay is a critical analysis of those works.
- The use of notes does not justify the sustained presentation of another author's language and ideas as one's own.

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 Arts' associate deans of students who will apply the penalties specified in the *University of Calgary Calendar*.

Universal Student Ratings of Instruction:

At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference. Please participate in USRI Surveys.

Student Accommodations:

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/.

Students who require an accommodation in relation to their coursework based on a protected grounds other than disability should communicate this need in writing to their Instructor.

The full policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>

Other Useful Information:

- Faculty of Arts Representatives: 403-220-6551, arts1@su.ucalgary.ca, arts2@su.ucalgary.ca, arts3@su.ucalgary.ca, arts4@su.ucalgary.ca.
- *Safewalk and Campus Security*: 403-220-5333.

Please also familiarize yourself about the following topics by consulting the information at these links:

- *Freedom of Information:* <http://www.ucalgary.ca/legalservices/foip/foip-hia>
- *Emergency Evacuation Assembly Points:*
<http://www.ucalgary.ca/emergencyplan/assemblypoints>
- *Safewalk:* <http://www.ucalgary.ca/security/safewalk>
- *Student Union Information:* <http://www.su.ucalgary.ca/>
- *Graduate Student Association:* <http://www.ucalgary.ca/gsa/>
- *Student Ombudsman Office:* <http://www.ucalgary.ca/provost/students/ombuds>

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