

HPSC0003: History of Science, Antiquity to Enlightenment

Course Syllabus

2022-2023 session | Simon Werrett | s.werrett@ucl.ac.uk

Course Information

Surveys the origins and development of science from the ancient Greeks to 1800. Main themes are the origins of science in the ancient world, the nature of the Scientific Revolution and the spread of science during the Enlightenment. Lectures are online and Discussion groups in person.

Basic course information

Assessment:	One 2500 word essay; One 1000 word essay
Timetable:	Go to the common timetable: www.ucl.ac.uk/sts/hpsc
Prerequisites:	No prerequisites
Required texts:	None
Course tutor(s):	Simon Werrett
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Web:	www.ucl.ac.uk/silva/sts/staff/werrett
Office location:	Home/ Room 1.2, 22 Gordon Sq.
Office hours:	Online: please contact tutor

Schedule

UCL Week	Topics	Week Ending
6	Introduction	OCT 7
6	The Beginnings of Science	OCT 7
7	Plato and Aristotle	OCT 14
7	Ancient Medicine: Hippocrates and Galen	OCT 14
8	Chinese and Arabic Science	OCT 21
8	Science in Medieval Europe	OCT 21
9	Copernicus and Renaissance Science	OCT 28
9	Printing the Moon: Galileo's Starry Messenger.	OCT 28
10	Essay Guidance Session	NOV 4
10	New Philosophies of Nature: Bacon and Descartes	NOV 4
11	Reading Week	NOV 11
12	Experiments at the Royal Society	NOV 18
12	Who Could Do Science?	NOV 18
13	Newton, Science, and Religion	NOV 25
13	Science in China and Russia	NOV 25
14	Public Science	DEC 2
14	Science and Empire	DEC 2
15	Women and the Enlightenment	DEC 09
15	Essay Guidance Session	DEC 09
16	Science and Art in the Eighteenth Century	DEC 16
16	Conclusion	DEC 16

Assessments

Summary

	Description	Deadline	Word limit	Feedback returned by
Essay 1	50% of final mark	7 December at 5pm	2500	11 January
Essay 2	50% of final mark	9 January at 5pm	1000	6 February

CLASSES

Students have a two-hour slot each week for lectures, plus one hour for a discussion seminar. The lectures are all recorded and available on Moodle, and students are expected to have watched them online by the end of the allotted time slot. The discussion seminars take place in person and will consist of a conversation about the week's essential reading with Prof. Werrett and/or Bethany Kidd, the teaching assistant ("PGTA") for the module. Please make sure you have read the essential reading before the class and bring a copy to class with you. Questions to help your reading will be available on Moodle and you are expected to be able to offer answers to them in the discussion. Note that registration is taken in each class and you are expected to attend.

In addition to the lectures and discussion seminars, Dr. Jenny Bulstrode will be running two sessions using archive and museum materials to explore themes raised in the module. These will take place at the following times:

- UCL Week 12, Friday 18 November 11:00am-13:00pm – session with UCL Special Collections, printed works on 17th and 18th century science and featuring 18th century works by female authors to complement recorded lectures 11 and 12.
- UCL Week 14 Friday 9 December 11:00am-13:00pm – session in the British Museum Enlightenment gallery to complement lecture 15; and with activities to identify objects in various galleries to complement lecture 16.

ASSESSMENT: ESSAY 1

You are required to write an essay of approximately and no more than 2500 words. Answer **one** of the following questions. Please read the STS Student Handbook for advice on word counts and late penalties. Answers should make use of the assigned literature.

(1) Following Philip Ball, should we stop calling the Babylonians "scientists"?

(2) How did ancient Greek natural knowledge change between the time of Homer and the time of Aristotle?

(3) Why is “On the Sacred Disease” an important text in the history of medicine? What does it argue?

(4) Outline the features of Chinese medicine as developed in *The Yellow Emperor's Classic of Internal Medicine*.

(5) How did Muslim scholarship shape European Christian science in the Middle Ages? Was this controversial at the time?

(6) How did Copernicus, Galileo and Newton transform astronomy between 1500 and 1700? What role did humanism play in these developments?

(7) What role did women play in the Scientific Revolution?

(8) How did science serve the state in eighteenth-century Russia and China?

(9) What was “public science”? Why is it important in the history of science in the eighteenth century?

(10) How was science related to empire in the eighteenth century?

(11) What does Denis Diderot’s essay on “Art” from the *Encyclopédie* tell us about the history of science in the eighteenth century?

(12) Was Caroline Herschel a typical woman of the enlightenment?

ASSESSMENT: ESSAY 2

You are required to write an essay of approximately and no more than 1000 words. Answer **one** of the following questions. Answers should engage with material from more than one lecture or seminar. Please read the STS Student Handbook for advice on word counts and late penalties.

(1) Is the history of science prior to 1800 a history of the conflict between science and religion?

(2) What role did instruments play in the history of science before 1800?

(3) Thomas Kuhn said that “The bulk of scientific knowledge is a product of Europe in the last four centuries.” With regards to the seventeenth and eighteenth centuries, do you agree?

Criteria for assessment

The departmental marking guidelines for individual items of assessment can be found in the STS Student Handbook. In addition to the criteria indicated in the STS Student Handbook, the following are the main criteria on which your research essay will be marked. There are no set numbers/ percentages associated with these criteria but we will give you qualitative feedback based on them.

Referencing

You must reference all quotes and all references/ summaries of books, etc. Pick one system for referencing and stick to it. Refer to individual page numbers, not just whole texts, whenever possible. Make sure you are clear what plagiarism means and do not plagiarize in the essay.

Bibliography

You need to supply a bibliography of all works referenced. You must supply author, title, date, place of publication and publisher. Essays should prioritize use of the readings given in the syllabus. If students wish to use other sources, they should check with the module tutor on their acceptability.

Answers the Question

Read the question carefully and answer it specifically - do not give irrelevant material or drift into answering other questions.

Organisation

Is the essay organized into an introduction, main body and conclusion? Does each part flow naturally into the next one? Is the evidence in a logical order?

Introduction

You should give an introduction to your essay in no more than one or two paragraphs. Introduce your topic and your line of argument, no more. Good introductions are concise and precise.

Clarity

We place great emphasis on clarity of argument and expression. Avoid ambiguity and vagueness. Do not assume your reader already knows what you are talking about. Try to keep your line of argument clear. It often helps clarity to divide the main body of the essay into sections (typically three or four for a 2500 word essay). Accurate spelling, grammar, and punctuation also improve clarity.

Argumentation

Is the main argument of the essay clear, coherent and persuasive? Is it properly supported by the evidence available?

Conclusion

Your essay should have a conclusion which is clearly marked as such (new paragraph, 'In conclusion...'). It should be substantial in summing up what you have argued and exploring the implications of what you have argued.

Reading/ use of sources

How well have the readings and other resources been used? Does the essay reflect them accurately? Is the essay overly dependent on one source?

Independent critique?

Does the essay offer some independent critique or thought on the question or does it merely report what is in the literature?

Historiography?

How aware is the essay of assumptions and methods used to construct a history or to evaluate it? Does the essay discuss what historians have said about the topic and offer some critique of them?

The criteria of assessment for the examination will be circulated during the module.

Aim of the course

The general aim of the course is to present an overview of the History of Science from its ancient beginnings up to the end of the eighteenth century. The course does not require any technical knowledge of current science. It is intended to function both as a course in its own right and as a foundation for other courses in Science and Technology Studies. It is hoped that a study of the origins and development of science will provide a better understanding of what science is now. The course is divided into three time periods, The Ancient and Medieval World, The Scientific Revolution and The Enlightenment, and it is hoped that you will learn something of the scientific zeitgeist as well as the major advances of those periods.

Objectives of the course

By the end of the course, it is hoped that you will have acquired :

- * a working knowledge of the history of science up to 1800
- * an in-depth knowledge of elements of this history, demonstrated in essay assessments.
- * key essay writing skills; the ability to select the most important facts, to marshal those in argument and an awareness of the strengths and weaknesses of that argument.
- * some basic historiographical skills; an awareness of anachronism and the basic methods of writing the history of science.

Lectures and Readings

Watch the lectures on Moodle ahead of the class discussions, which will take place on campus. Be ready to discuss the essential reading in the seminar.

Part 1: The Ancient and Medieval World

Week 6

Lecture 1. Introduction

Lecture 2. The Beginnings of Science

Discussion Group 1 – Discuss Essential Reading (FRIDAY OCT 7)

Philip Ball, "Stop Calling the Babylonians Scientists," *The Atlantic* February 10, 2016.

Optional Readings:

Krauss, R. "Egyptian Calendars and Astronomy," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 131-143.

Rochberg, F. "Science and Ancient Mesopotamia," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 7-28.

Høyrup, J. "Mesopotamian Mathematics," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 58-72.

Steele, J. "Babylonian and Assyrian Astral Science," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 73-98.

Lindberg, D. C. *The Beginnings of Western Science* (University of Chicago Press, 2007), chapter 1.

Fara, P. *Science: A Four Thousand-Year History* (Oxford: Oxford University Press, 2009), part 1, chapter 2.

Week 7

Lecture 3. Plato and Aristotle

(Connected Module: Science in the Ancient World)

Lecture 4. Ancient Medicine: Hippocrates and Galen

(Connected Module: History of Medicine)

Discussion Group 2 – Discuss Essential Reading (FRIDAY OCT 14)

Hippocrates, "On the Sacred Disease." (Online reading)

Optional readings:

Plato, *Timaeus and Critias*, ed. Andrew Gregory (Oxford: Oxford University Press, 2019).

Gregory, Andrew, *Eureka! The Birth of Science* (Icon, 2001).

Graham, Daniel W. "Physical and Cosmological Thought Before Aristotle," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 163-180.

Osborne, C. *Pre-Socratic Philosophy: A Very Short Introduction* (Oxford, Oxford University Press: 2004).

Falcon, A. "Aristotle: An Overview," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 181-195.

Lewis, E. "Aristotle's Physical Theory," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 196-214.

Van der Eijk, P. "Medicine in Early and Classical Greece," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 293-315

Nutton, V. "Hellenistic and Roman Medicine," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 316-344.

Lindberg, D. C. *The Beginnings of Western Science* (University of Chicago Press, 2007), chapters 2-3, and 6.

Fara, P. *Science: A Four Thousand-Year History* (Oxford: Oxford University Press, 2009), part 1, chapter 4-6.

Nutton, V. *Ancient Medicine* (Oxford: Routledge, 2013)

Irby, Georgia L., *A Companion to Science, Technology and Medicine in Ancient Greece and Rome, volume 1* (Chichester: Wiley-Blackwell, 2016), Part V : Healing and the Human Body.

Craik, Elizabeth, "Hippocrates and Early Greek Medicine," in Paul T. Keyser and John Scarborough, eds., *The Oxford Handbook of Science and Medicine in the Classical World* (New York: Oxford University Press, 2018).

Hankinson, R. J. ed., *The Cambridge Companion to Galen* (Cambridge: Cambridge University Press, 2008).

Pormann, Peter E. ed., *The Cambridge Companion to Hippocrates* (Cambridge: Cambridge University Press, 2018).

Week 8

Lecture 5. Chinese and Arabic Science

Lecture 6. Science in Medieval Europe

Discussion Group 3 – Discuss Reading (FRIDAY OCT 21)

Huang Ti Nei, Ching Su Wen, *The Yellow Emperor's Classic of Internal Medicine* (University of California Press, 1975), book 2, pp. 115-132.

Optional readings:

Lo, V. "Medicine and Healing in Han China," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 574-594.

Veith, Ilza, "Introduction: Analysis of the Huang Ti Nei Ching Su Wên." *The Yellow Emperor's Classic of Internal Medicine* (Berkeley: University of California Press, 1975), pp. 1–76 (available on JSTOR).

Cullen, C. "Chinese Astronomy in the Early Imperial Age: A Brief Outline," In *The Cambridge History of Science Volume 1: Ancient Science*, eds. A. Jones & L. Taub (Cambridge: Cambridge University Press, 2018), 595-616.

Ragep, F. "Islamic Culture and the Natural Sciences." In *The Cambridge History of Science Volume 2: Medieval Science*, eds. D. Lindberg & M. Shank (Cambridge: Cambridge University Press, 2013), 27-61.

Dear, P. "What Was Worth Knowing in 1500?" in P. Dear, *Revolutionizing the Sciences* (Princeton, NJ: Princeton University Press, 2009), chapter 1.

Shank, M. "Schools and Universities in Medieval Latin Science," In *The Cambridge History of Science Volume 2: Medieval Science*, eds. D. Lindberg & M. Shank (Cambridge: Cambridge University Press, 2013), 207-239.

Lindberg, D. "Science and the Medieval Church," In *The Cambridge History of Science Volume 2: Medieval Science*, eds. D. Lindberg & M. Shank (Cambridge: Cambridge University Press, 2013), 268-285.

Hobson, John M. *The Eastern Origins of Western Civilisation* (Cambridge: Cambridge University Press, 2004), 173-189.

Grant, E. "Cosmology," In *The Cambridge History of Science Volume 2: Medieval Science*, eds. D. Lindberg & M. Shank (Cambridge: Cambridge University Press, 2013), 436-455.

Lindberg, D. C. *The Beginnings of Western Science* (University of Chicago Press, 2007), chapters 8 to 12.

Fara, P. *Science: A Four Thousand-Year History* (Oxford: Oxford University Press, 2009), part 2, chapters 2-6.

Part 2: The Scientific Revolution

Week 9

Lecture 7. Copernicus and Renaissance Science

Lecture 8. Printing the Moon: Galileo's *Starry Messenger*
(Connected Module: Science and the Publishing Industry)

Discussion Group 4 – Discuss Reading (FRIDAY OCT 28)

Galileo, *The Starry Messenger* (Florence, 1610)

Optional Readings:

Dear, P. “Humanism and Ancient Wisdom: How to Learn Things in the Sixteenth Century,” in P. Dear, *Revolutionizing the Sciences* (Princeton, NJ: Princeton University Press, 2009), chapter 2.

Donahue, W. “Astronomy,” In *The Cambridge History of Science Volume 3: Early Modern Science*, eds. L. Daston & K. Park (Cambridge: Cambridge University Press, 2006), 562-595.

Westman, R. “Competing Disciplines: The Copernicans and the Church,” in *The Scientific Revolution: The Essential Readings*, ed. Marcus Hellyer (Oxford: Blackwell, 2003), 44-71.

Johns, Adrian, *The Nature of the Book* (Chicago, 1998), Introduction.

Wilding, Nick, “The Printing Press,” in *A Companion To The History Of Science*, ed. Bernard Lightman (Oxford, 2016), 179-195.

Swordlow, Noel M., “Galileo's discoveries with the telescope and their evidence for the Copernican theory”, in *The Cambridge Companion to Galileo*, ed. Peter Machamer (Cambridge, 1998), 244-270.

Dear P., “Mathematics Challenges Philosophy: Galileo, Kepler, and the Mathematical Practitioners,” in P. Dear, *Revolutionizing the Sciences* (Princeton, NJ: Princeton University Press, 2009), chapter 4.

Fara, P. *Science: A Four Thousand-Year History* (Oxford: Oxford University Press, 2009), part 3, chapters 3-4.

Week 10

Lecture 9. Essay Guidance session

Lecture 10. New Philosophies of Nature: Bacon and Descartes

Discussion Group 5 – Discuss Reading (FRIDAY NOV 4)

Francis Bacon, *New Atlantis* (1626), pp. 1-17, 24-34.

Optional readings:

Harkness, D. E. “From the Jewel House to Salomon’s House: Hugh Plat, Francis Bacon, and the Social Foundations of the Scientific Revolution,” In D. Harkness, *The Jewel House: Elizabethan London and the Scientific Revolution* (Yale University Press, 2007), 211-253.

Dear, P. "Mechanism and Corpuscles: Descartes Builds A Universe," in P. Dear, *Revolutionizing the Sciences* (Princeton, NJ: Princeton University Press, 2009), chapter 5.

Rossi, P. "Bacon's Idea of Science," in *The Cambridge Companion to Bacon*, ed. Markku Peltonen (Cambridge: Cambridge University Press, 1996), 25-46.

Fara, P. *Science: A Four Thousand-Year History* (Oxford: Oxford University Press, 2009), part 3, chapters 5-6.

Week 11 - Reading Week – no classes, but make sure you're up to date with readings

Week 12

Lecture 11. Experiments at the Royal Society

Lecture 12. Who Could Do Science?

Discussion Group 6 – Discuss Reading (FRIDAY NOV 18)

"Testing Drugs and Trying Cures – The Recipes Project" – explore the essays in this online blog.

Optional Readings:

Dear, P. "The Meanings of Experience," In *The Cambridge History of Science Volume 3: Early Modern Science*, eds. L. Daston & K. Park (Cambridge: Cambridge University Press, 2006), 106-131.

Shapin, S. "The Experimental Philosophy and Its Institutions: Pump and Circumstance: Robert Boyle's Literary Technology," in *The Scientific Revolution: The Essential Readings*, ed. Marcus Hellyer (Oxford: Blackwell, 2003), 72-100.

Sidoli, N. "Learned Man and Woman in Antiquity and the Middle Ages," in *A Companion to the History of Science*, ed. Bernard Lightman (Oxford: Wiley, 2016), 23-38.

Schiebinger, L. "Women of Natural Knowledge," In *The Cambridge History of Science Volume 3: Early Modern Science*, eds. L. Daston & K. Park (Cambridge: Cambridge University Press, 2006), 192-205.

Neri, J. *The Insect and the Image: Visualizing Nature in Early Modern Europe, 1500-1700* (Minnesota, 2011), chapter 5: "Stitches, Specimens, and Pictures: Maria Sibylla Merian and the Processing of the Natural World."

Etheridge, K. "Maria Sibylla Merian and the metamorphosis of natural history," *Endeavour* 35 (March 2011): 16-22.

Wilkins, E. "Margaret Cavendish and the Royal Society," *Notes and Records of the Royal Society of London* 68, no. 3 (2014): 245-60.

Elaine Leong, "Making Medicines in the Early Modern Household," *Bulletin of the History of Medicine* 82 (2008): 145-168.

Elaine Leong, "Collecting Knowledge for the Family: Recipes, Gender and Practical Knowledge in the Early Modern English Household," *Centaurus* 55 (2013): 81-103.

Part 3: The Age of Enlightenment?

Week 13

Lecture 13. Newton, Science, and Religion
(Connected Module: Science and Religion)

Lecture 14. Science in China and Russia

Discussion Group 7 – Discuss Reading (FRIDAY NOV 25)

Isaac Newton, "General Scholium" of the *Principia*

Optional Readings:

Dear, P. "Cartesians and Newtonians," in P. Dear, *Revolutionizing the Sciences* (Princeton, NJ: Princeton University Press, 2009), chapter 8.

Cohen, I. B. "The Newtonian Achievement: The Newtonian Revolution," in *The Scientific Revolution: The Essential Readings*, ed. Marcus Hellyer (Oxford: Blackwell, 2003), 178-193.

Kubrin, David, "Newton and the Cyclical Cosmos: Providence and the Mechanical Philosophy," *Journal of the History of Ideas* 28, no. 3 (1967): 325-46.

Iliffe, Rob, "The Religion of Isaac Newton," in *The Cambridge Companion to Newton*, eds. Rob Iliffe and George E. Smith, second edition (Cambridge: Cambridge University Press, 2016).

Gordin, Michael, "The Importation of Being Earnest: the Early St. Petersburg Academy of Sciences," *Isis* 91 (2000) 1-31.

Werrett, Simon, "The Schumacher Affair: Reconfiguring Academic Expertise across Dynasties in Eighteenth-Century Russia," *Osiris* 25, no. 1 (2010): 104-26.

Elman, B. *A Cultural History of Science in Modern China* (Cambridge: Harvard University Press, 2006), chapter 2.

Dikötter, F. "China," in *The Cambridge History of Science: Volume 4: Eighteenth-Century Science*, ed. R. Porter (Cambridge: Cambridge University Press, 2008), 688-697.

Week 14

Lecture 15. Public Science
(Connected Module: Science in Popular Culture)

Lecture 16. Science and Empire
(Connected Module: History of Science 2)

Discussion Group 8 – Discuss Reading (FRIDAY DEC 2)

British Library website: The voyages of Captain James Cook – explore the essays and links on this site.

Optional Readings:

Johns, A. "Coffee Houses and Print Shops," In *The Cambridge History of Science Volume 3: Early Modern Science*, eds. L. Daston & K. Park (Cambridge: Cambridge University Press, 2006), 320-340.

Stewart, L. "Public Lectures and Private Patronage in Newtonian England," *Isis* 77, No. 1 (March 1986): 47-58.

Larry Stewart, *The Rise of Public Science: Rhetoric, Technology, and Natural Philosophy in Newtonian Britain, 1660-1750* (Cambridge: Cambridge University Press, 1992).

Jessica Riskin, "Amusing Physics," in Bernadette Bensaude-Vincent, ed., *Science and Spectacle in the European Enlightenment* (Ashgate, 2007), chapter 3.

Lynn, M. R. "The Fashion for Physics: Public Lecture Courses in Enlightenment France," *The Historian* 64 (2002): 335-350.

Iliffe, R. "Science and Voyages of Discovery," in *The Cambridge History of Science: Volume 4: Eighteenth-Century Science*, ed. R. Porter (Cambridge: Cambridge University Press, 2008), 618-646.

Cook, A. S. "James Cook and the Royal Society," In *Captain Cook: Explorations and Reassessments*, ed. Glyndwr Williams, (Boydell and Brewer, 2004), pp. 37-56.

Stewart, L. "Global Pillage: Science, Commerce, and Empire," in *The Cambridge History of Science: Volume 4: Eighteenth-Century Science*, ed. R. Porter (Cambridge: Cambridge University Press, 2008), 825-844.

Jordan Goodman, *Planting the World: Joseph Banks and his Collectors: An Adventurous History of Botany* (William Collins, 2020).

Andrew Goss, ed., *The Routledge Handbook of Science and Empire* (London: Routledge, 2021).

Week 15

Lecture 17. Women and the Enlightenment
(Connected Module: History of Astronomy)

Lecture 18. Essay Guidance session

Discussion Group 9 – Discuss Reading (FRIDAY DEC 9)

Winterburn, E. “Caroline Herschel: Agency and Self-Presentation,” *Notes and Records of the Royal Society of London* 69 (2015): 69–83.

Optional readings:

Hoskin, M. “Caroline Herschel as an Observer,” *Journal of the History of Astronomy* 36: 4 (2005): 373-406.

Schiebinger, L. “The Philosopher’s Beard: Women and Gender in Science,” In R. Porter, ed., *The Cambridge History of Science* (Cambridge, 2003), 184-210.

Shteir, A. B. *Cultivating Women, Cultivating Science: Flora’s Daughters and Botany in England, 1760-1860* (Baltimore, 1996), chapter 2 “Women in the Polite Culture of Botany”.

Maerker, A., E. Serrano, S. Werrett, eds., “Enlightened Female Networks: Gendered Ways of Producing Knowledge (1720–1830),” special issue of *Notes and Records of the Royal Society* (2022).

Serrano, E. *Ladies of Honor & Merit: Gender, Useful Knowledge, & Politics in Enlightened Spain* (University of Pittsburgh Press, 2022).

Week 16

Lecture 19. Science and Art in the Eighteenth Century

Lecture 20. Conclusion

Discussion Group 10 – Discuss Reading (FRIDAY DEC 16)

Denis Diderot, “Art” from the *Encyclopédie* (1751).

Optional readings:

Pannabecker, J. R. “Representing Mechanical Arts in Diderot’s *Encyclopédie*,” *Technology and Culture* 39 (1998): 33-73.

Roberts L., S. Schaffer, and P. Dear, eds. *The Mindful Hand: Inquiry and Invention From the Late Renaissance to Early Industrialisation* (Royal Netherlands Academy of Arts and Sciences, 2007), 278-305.

Ashworth, W. J. "System of Terror!: Samuel Bentham, Accountability and Dockyard Reform during the Napoleonic Wars," *Social History* 23, No. 1 (Jan. 1998): 63-79 .

Rossi, P. *Philosophy, Technology, and the Arts in the Early Modern Era*, trans. Salvator Attanasio (New York: Harper & Row, 1970).

Werrett, S. *Fireworks: Pyrotechnic Arts and Sciences in European History* (Chicago: University of Chicago Press, 2010).

Course expectations

Students are expected to attend all classes, and to be prepared to discuss the readings which they should bring to class either in hard copy or electronic format. Students should read and make notes on essential texts, thinking of questions to ask about them in class. If a student cannot attend, please let the module tutor know beforehand.

Important policy information

Details of college and departmental policies relating to modules and assessments can be found in the STS Student Handbook www.ucl.ac.uk/sts/handbook

All students taking modules in the STS department are expected to read these policies.