Special Studies in the History of Pre-Modern Science  
HSCI 5990 Fall 2010

Course Description: This course is a team-taught graduate survey of the history of science, intended to broaden and deepen the content presented in HSCI 3013 (which, in most cases, you will be auditing in conjunction with this graduate course), and to introduce you to advanced historiography that relates to the pre-modern period. You will encounter both classic work in the discipline as well as more recent viewpoints. In conjunction with your auditing of HSCI 3013, the goal for this 5990 supplement is to provide you with a working knowledge of the basic “canon” of topics and historiographic issues in the pre-modern period, and an awareness of the broad array of themes and content that constitute the larger web of connections in thinking about the history of early science, technology and medicine. In reaching this goal you will be better prepared to undertake such tasks as building your own bibliographies for further study and research and better prepared to serve as a teaching assistant in the undergraduate survey at a later date, due to a fuller knowledge of the historical background and historiography.

Instructors:  
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Course Mechanics:  
3013 Component: All students in this 5990 are expected to be directly involved in one of the sections of 3013 offered this semester, either as an actively auditing student or as a course GTA. The professor for the 3013 you take will specify the exact nature of your obligations to that course, but you should expect, at a minimum, to be required to attend the lectures and discussions and to do the readings. Some faculty may ask you to do weekly homework assignments or to take quizzes and exams as well; others may not.  
Weekly 5990 Seminar: The course will meet weekly as a seminar. Students are expected to turn in a short writing assignment, or other work at the discretion of the instructor, for each week that has assigned reading. Generally, the writing assignment will be an analytical essay of approximately 750-1000 words on the primary reading for that week; it should go beyond summarizing key points to integrate an analytical discussion as well. However, some instructors may instead give you specific instructions on how to structure the short writing assignments, or give you a specific question or questions on which to focus. If so, they will forward those instructions to you via email prior to your need to prepare the assignment. As the overall coordinator for the course, Dr. Crowther will oversee this process as well as the general structure – if you have any questions about logistics at any time, feel free to contact her by email (kcrowther@ou.edu) or telephone (325-2247) or in person (PHSC 602). If you are unclear about the expectations for any particular assignment, please ask the relevant professor.

Grading: Your grade for the course will be determined by all five participating faculty. It will depend upon both your writing assignments and your participation in the weekly discussions, with the writing assignments being weighted more heavily.
Readings: For the required reading, we will seek to place copies of texts owned by OU on reserve in the Collections. If articles are part of the required reading we will scan the material and post it on the D2L site for the course. We strongly urge you to consider buying the following books: Katharine Park, *Secrets of Women*, Sachiko Kusukawa, *The Transformation of Natural Philosophy*, Harold Cook, *Matters of Exchange*, Elizabeth Eisenstein, *The Printing Revolution in Early Modern Europe*, and William Newman, *Atoms and Alchemy* (full references in syllabus). We will be reading all or substantial sections of these books and you will find it difficult to complete the writing assignments without your own copy. Sources such as amazon.com often offer discounted prices for new texts and access to used copies; bookstores such as abe.com, alibris.com, bookfinder.com, and especially AddAll.com (which searches more than forty online book consortia) are also helpful sources for used books.

Course Meeting Times: The regular meeting time will be Tuesdays 9:00 – 11:00 am, *except for August 30, September 6 and September 13 when the seminar will meet 8:30 – 10:30 am*. All meetings will be in the Harlow Room of the History of Science Collections, Bizzell Library, 5th Floor.

Course Schedule:

**August 23** — Introductory meeting, attended by all instructors.

**August 30** — Cultures of ancient science (Dr. Livesey)

Reading:

**September 6** — Aristotle: Physics, Cosmology, Biology (Dr. Livesey)

Reading:

September 13 — Science in medieval universities (Dr. Livesey)
Read for background:
Hilde de Ridder-Symoens ed., A History of the University in Europe, I, Universities in the Middle Ages (Cambridge: Cambridge UP 1992). Read especially chapters 1-2; browse Parts II ('Structures') and III ('Students') for sections of individual interest; the five chapters in Part IV ('Learning') will be distributed among the students in the class.
Focal reading:

September 20 — Medieval Medicine (Dr. Crowther)
Read for background:
Vivian Nutton, 'Medicine in Medieval Western Europe, 1000-1500', in: Lawrence Conrad et al., The Western Medical Tradition 800 BC to AD 1800 (Cambridge: Cambridge University Press 1995) 139-205.
Focal reading:

September 27 — Islamic Science (Dr. Barker)
Read for background:
Olaf Pedersen, Early Physics and Astronomy (Cambridge: Cambridge University Press 1993) pp. 150-70 (Islamic science generally), 234-45 (Islamic astronomy), 263-82 (Copernicus)
Focal reading:

**October 4** Astronomy and Cosmology (Dr. Barker)

Reading:

Kathleen M. Crowther and Peter Barker, “Training the Intelligent Eye: Understanding Illustrations in Early Modern Astronomy Texts”, unpublished manuscript


**October 11** — Science and Religion (Dr. Barker)

Reading:


**October 18** — Mathematics in the Renaissance (Dr. Vermij)

During the Renaissance, in various fields craft knowledge increasingly made place for mathematical methods. Such in fortification, navigation, surveying, painting (linear perspective), etc. This rise in prominence of mathematics (and its practitioners) was an important element in the intellectual transformations of the period. The use of mathematical methods is not self-evident. Practitioners had come out without them for centuries. Why would mathematicians write treatises on the crafts, and why would practitioners (or their patrons) be interested in these abstruse theories?

Reading:


**October 25** — Seventeenth-century mechanical philosophy (Dr. Vermij)

Focal reading:


Note: This is an important article, but in order to grasp its full meaning, you may have to look up some basic information, e.g. about Descartes' specific contribution. On the mechanical philosophy, some background is offered by Margaret Osler, *Divine will and the mechanical philosophy. Gassendi and Descartes on contingency and necessity in the created world*
Descartes' most pertinent work is his *Principia philosophiae*. Prepare a short paper on the question: what is the significance of the mechanical philosophy in the history of science? Explain what the mechanical philosophy entailed and what was the specific role of Descartes.

**November 1 — Eighteenth-century science (Dr. Vermij)**

Eighteenth-century science is an intriguing field. Newton's physics, and the new science of the seventeenth century generally, was originally the hobby of a tiny group of researchers. For most people it was hard to grasp and for the moment there were no practical benefits. So, how did it come about that within a short time Newton's theories wielded such immense authority?

**Read for background:**

**Focal reading:**

**November 8 — Medicine and Natural History (Dr. Crowther)**

Reading:

**November 15 — The Anatomical Renaissance (Dr. Crowther)**

Reading:

**November 22 — Books, Printing and the Sciences (Dr. Magruder)**

Reading:
Marina Frasca-Spada and Nick Jardine ed. *Books and the Sciences in History* (Cambridge: Cambridge University Press 2000). Read the Introduction, Chapter 4 (Blair), and the two afterwords.

Optional: We will devote half of our time to examining the features of early printed books. To prepare for that lab-component of the class, you may want to become familiar with some of the

**November 29 — Theories of the earth (Dr. Magruder)**
**Reading:**

**December 6 — Alchemy (Dr. Crowther)**
**Reading:**