Is ‘medieval science’ oxymoronic? To most of us, science is modern, inquisitive, rational, while ‘medieval science,’ if it exists at all, is perceived as superstitious, authoritarian, traditional, a remnant of an earlier and now discarded age. Yet with a little investigation, we find that the initial steps in many modern ideas and institutions were taken during the long period between the end of the ancient world and the European Renaissance. The very institution in which we live and work – the university – was born in the twelfth century; our modern notions of economic value can be traced to scholastic writers of the thirteenth century; and the difficult debates about the beginning and end of life that permeate modern political, social and religious discourse have roots in medieval theology and philosophy.

But this course is not just about “how we got from there to here,” or as the English historian Arnold Toynbee famously referred to history, “one damn thing after another.” We will also examine the unique and idiosyncratic medieval ideas that failed to become part of the Western scientific heritage. As Carlo Ginzburg has noted, “The historian’s task is just the opposite of what most of us were taught to believe. He must destroy our false sense of proximity to people of the past because they came from societies very different from our own. The more we discover about these people’s ‘mental universe,’ the more we should be shocked by the cultural distance that separates us from them.”

Readings

The following readings are available in the bookstore:


We will be reading part or all of the following text that is currently out of print:


This text and the individual articles or book chapters assigned in the following schedule of readings will be available in the “Content” section of the D2L site for this course.
Topics

I. Preliminary Topics

Week 1: August 21, 23

[T] Introduction to the course

[R] Science and Christianity in Late Antiquity.

Week 2: August 28, 30


[R] Feudal Society.

II. Renaissance of the Twelfth Century

Week 3: September 4, 6

[T] The Investiture Contest.
Reading Assignment: Hollister, ch. 10-12; Southern, Making of the Middle Ages, ch. 3; Grant, God and Reason ch. 1.

[R] Politics, Religion and Sex.

Week 4: September 11


Public Lecture: “Cultural Transmission across Religious Boundaries in the Middle Ages,” Community Room, Zarrow Hall, 4:30 pm.
III. Institutions of Science

Week 4: September 13


Week 5: September 18, 20

Reading Assignment: none.


Week 6: September 25, 27

[T] The Condemnations of 1270 and 1277: Theology and Science in the Middle Ages.


Public Lecture: “The medieval university as religious confraternity” Community Room, Zarrow Hall, 4:30 pm.

IV. Technology and Knowledge Management

Week 7: October 2, 4

[T] Scriptoria and Book Production.

[R] Knowing It All: Medieval Fascinations with Encyclopaedic Knowledge

Week 8: October 9

[T] Medieval Technology – Professor Thomas F. Glick, Boston University.
Travel of Scientific Ideas and Techniques between China and Europe,” pp. 150-248, esp. sections g, i, j, k, l; as an exercise, look at the references to China in White, *Medieval Technology and Social Change*, which are largely confined to Chapter 3.

**Public Lecture:** “The Scientific Translation Movement in Twelfth-Century Spain and the Invention of Hebrew Science” Community Room, Zarrow Hall, 4:30 pm.

### V. Scientific Disciplines

**Week 8: October 11**

- **[R]** Classification of the Sciences.

**Week 9: October 16, 18**

- **[T]** The Analytic Languages of Science: The New Logic and Grammar.

- **[R]** God and Mammon: Theology, Nature, Money, and Quantification.

**Weeks 10-15: October 23 – November 29**

**October 23, 25: Medicine, Natural History and Gender.**

**Professor Joan Cadden, University of California, Davis (October 23)**


- **Public Lecture:** “Sex and Science in the Middle Ages,” Community Room, Zarrow Hall, 4:30 pm.
Hall, 4:30 pm.


October 30, November 1: Medieval Optics.
Reading Assignment: Lindberg, ch. 10; Grant, Sourcebook no. 61.1, 62.6, 62.9, 62.15, 62.18, 62.24, 62.27, 62.32.

November 6, 8, 13: Cosmology, Astronomy, Astrology.

Professor Laura Ackerman Smoller, University of Arkansas, Little Rock (November 8)
Reading Assignment for November 6, 13: Lindberg, ch. 8-9; Grant, Sourcebook 67.4, 67.5, 68.1-3.


November 15, 20, 27, 29: Mathematics and motion.

Professor Edith D. Sylla, North Carolina State University (November 27)

Public Lecture: “Mathematics and Imagination in Late-Medieval Physics and Astronomy,” Community Room, Zarrow Hall, 4:30 pm.

Reading Assignment for November 15, 20, 29: (Lindberg, ch. 5, 6, 7; Grant, Sourcebook no. 19, 25, 31, 42, 46, 48, 49, 50.1, 51.1.

VI. Epilogue

Week 16: December 4, 6

[T-R] (Why) did medieval science decline after 1350?

Special Note

Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so that we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

Requirements

1. The most important requirement is, of course, the completion of the readings as assigned. Because the course will not be a traditional lecture, but rather lecture punctuated by discussion, it is imperative that everyone be able to contribute.

2. We will have two examinations, both of the take-home variety, one approximately in the middle of the semester, the other during finals week.

3. Students will complete a detailed analytical essay focused on a primary source text from the middle ages. During the second half of the course, you will gain some practice in doing this orally, since class time will be devoted to discussions of important texts in a variety of disciplines in the late middle ages. The analytical essay is designed to give you the opportunity to develop this kind of investigation on a topic of your own choice. The exercise will be spread over the entire semester. During the second week of the course, I want to meet with each of you to help identify an area of interest and to suggest places where you can begin looking for an appropriate source. By the end of the fourth week, I ask that you identify (in writing) the text you have selected as the focus of your review. By the end of the seventh week, you must provide a biographical sketch of the author of that text and a bibliography of materials that you will use in the analysis of your text. By the end of the tenth week, you must provide an outline of important questions or issues that the text addresses. On the last day of the course (December 6), you must submit the analytical essay. Each of these steps will be described in greater detail as we progress through the semester, and I will give you handouts of suggested materials that you can consult to find a primary source and for information on the author or related issues.

Academic Integrity

Please be aware of the seriousness of plagiarism. It is imperative that you acknowledge all sources. Plagiarism is defined as the unacknowledged use of specific ideas, arguments, or extended passages from any source. It is an extremely serious academic offense (to say nothing of the moral issues involved); you may wish to consult the Student Code for penalties. For your convenience, the Provost has created a comprehensive website on academic integrity at http://integrity.ou.edu/

Just for Fun (and a Little Extra Credit)

The theme of Edward Grant's final chapter is that the Middle Ages has suffered a 'bad rap' at the hands of modern popular (and often high) culture. And yet, the Middle Ages has remained a popular period for modern people, as evidenced by all of you who signed up for the course (see, I'm either naïve or an optimist); as Umberto Eco has wryly suggested, “It seems that people like the Middle Ages.” But of course liking something doesn’t necessarily mean understanding it, and this seems to be Grant’s point. As an extra-credit exercise, I ask you to analyze a substantial piece of modern exposition about the Middle Ages, on the basis of what you have come to learn about the period in this course. What is substantial?
• It might be a novel: two of the more popular choices from the past generation are Umberto Eco’s *Name of the Rose* and Michael Crichton’s *Timeline*, to say nothing of the whole series of mysteries by Ellis Peters on Brother Cadfael. Two-thirds of Iain Pears’ *The Dream of Scipio* focuses on the breakdown of the ancient world and the horrific plague years of the 14th century. But if you range a little farther afield, you will find other interesting works that purport to give insight into the Middle Ages, but may often tell us more about the modern world.

• It might be a film: both Eco’s and Crichton’s works have been turned into feature films. Classics are Ingmar Bergman’s “The Seventh Seal” (1957) or John Huston’s “A Walk with Love and Death” (1969). At the other end of the scale, of course, there is “Monte Python and the Holy Grail” (1975) or “A Knight’s Tale” (2001). You can find an extensive list of films in Kevin Harty’s *The Reel Middle Ages* (1999).

• It might be works of modern art: the German-American artist Kiki Smith includes emblems of Books of Hours and Bestiaries among the themes she uses; and while he is 18th-19th century, William Blake was well-known for his (then) modern portrayals of medieval themes.

• It might be a portfolio of modern advertisements: Xerox’s Brother Dominic (1975) who miraculously copies documents with his 9200, or AOL’s monks who have taken vows of silence, but communicate via Instant Messenger, or Pepsi’s alternating images of monks chanting and a rock band.

Whatever you choose, I ask that you produce a 3-page analytical essay that explores the way by which the modern medium has either captured an essential aspect of the Middle Ages, or as Eco has suggested, “reimagined” the Middle Ages in his (or her) own image. Essays will be due November 20. Those who submit an essay will be able to count it as 10% of the final grade; in other words, the three written exercises outlined above will constitute 90% rather than 100% of the total grade, thus distributing your effort and reducing the significance of each exercise. Only one such essay will be accepted from each student.

A word about grades….

The following represents a schematic list of criteria used to assess the quality of essays.

**A – exceptional performance**
- sophisticated analysis of the text
- argument substantiated by the sources
- polished style, effective writing, careful proofreading of final essay
- accuracy in details

**B – good performance**
- attempted analysis, somewhat less sophisticated than ‘A’ paper
- weaker evidence for positions; some flaws in argument
- modest insertion of irrelevant details
- less polished and effective writing, occasional lapses in proofreading
- some minor errors or inaccuracies

**C – moderately acceptable**
- highly narrative, little analysis; repeats the sources without extending or analyzing
- poor argument, weak evidence
- missed point of the essay topic; strayed from the topic
- substantial difficulty in writing; significant number of spelling or typographical errors
- errors in fact

**D – mediocre; barely acceptable**
- brief, minimal attempt to discuss the source
- draws upon the textbook for the course, without addressing the primary source
- incoherent; egregious mistakes in spelling, grammar, presentation
- errors in detail, fact

Plagiarized essays will not be graded, but will instead be subject to either a formal admonition or a charge of academic misconduct. (See the section on Academic Integrity above.)
D2L’s gradebook assumes that instructors adopt a point scale or assign percentages to papers and examinations. I have never been a proponent of either system, for a variety of reasons, but mostly because I use essays to assess student learning, and I consider it impossible to distinguish between an essay worth 88% and another worth 87%. As a result, I have retained the standard 4-point letter grade scale, with + and – variants for each letter grade. To ‘trick’ D2L to record and then average the grades, I have created a grading scheme “Plus&Minus” that converts the letter grades to percentages, and then back to letter grades after the averages are calculated. Over the years, this has created all kinds of confusion, because D2L presents the grades to students as percentages. To obtain the letter grade, remember that this percentage is a function of a maximum score of 4.0, so 75% is (.75)(4.0) = 3.0, or a ‘B’ (not, as most students initially assume, a ‘C’).

In entering grades into D2L, I use the following 11 values that correspond to letter grades:

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<thead>
<tr>
<th>Letter</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>4.0</td>
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<tr>
<td>A-</td>
<td>3.67</td>
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<tr>
<td>B+</td>
<td>3.33</td>
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<tr>
<td>B</td>
<td>3.0</td>
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<td>B-</td>
<td>2.67</td>
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<td>C+</td>
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<td>C</td>
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<td>C-</td>
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<td>D</td>
<td>1.0</td>
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<tr>
<td>D-</td>
<td>0.67</td>
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</tbody>
</table>

At the end of the course, if the average is 3.50 (that is, 87.5%) or higher, the grade is in the ‘A’ range; between 2.5 (62.5%) and 3.49 (87.49%), in the ‘B’ range; and so on. Of course, given my reservations about numerical precision in assigning grades, this overstates the structured nature of the categories, since there are frequently extenuating circumstances for shifting upward or downward.

If this is still unclear, please don’t hesitate to ask!

**Contacting me…**

Don’t hesitate: a question delayed is a problem created. My office is Physical Sciences 604; scheduled office hours are Monday 1:00-3:00, but you may call me (325-6490 or 325-2213) and arrange an appointment at most other hours during the week.

You can also send me email at slivesey@ou.edu.

I also don’t mind your calling me at home (at reasonable hours) 360-0282.