Course Requirements
1. Regular attendance and active participation. This will be a significant determinant of grade.
2. Weekly submission of a brief précis of the previous week’s reading in the light of the previous week’s lecture and discussion. Each seminar will begin with a 20 minute discussion of the previous week’s material and the document should provide material for this discussion.
3. Four short papers (4 double spaced pages), one on each century 17th, 18th, 19th and 20th century science. Each paper would normally be expected to relate to the material covered in one seminar.
4. (For HPS grad students only) A comprehensive examination consisting of two essay questions chosen from an extensive list and ten brief questions (identify or define the item, relate to historical context, no choice). The examination questions are set in such a way as to test familiarity with the primary sources assigned in the course, as opposed to popular interpretations of the material or recollection of classroom discussion. Students must write passing answers on both essays and on at least seven of the ten brief questions.

Class Format
Each seminar will begin with a 20 minute discussion of the previous week’s material, followed by a presentation by a faculty member on the current week’s material and a discussion of that material.

Course Outline

<table>
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<tr>
<th>Seminar Dates</th>
<th>Topic</th>
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<tr>
<td>Jan 8</td>
<td><strong>Introduction</strong></td>
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<td>Jan 15</td>
<td><strong>The Mechanical Philosophy</strong></td>
<td>Belot</td>
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*Primary Sources*

- *Optics*, First Discourse, Second Discourse, Eight discourse
- *Treatise on Light* and other principle objects of the senses
### The Rise of Rational Mechanics

**Primary Sources**

**Secondary Sources**

### Geology, the Life Sciences and Darwin

**Primary Sources**
- Adam Sedgwick, Presidential Address, *Proceedings of the Geological Society of London* 1831

**Secondary Sources**
- [http://www.leeds.ac.uk/classics/resources/poetics/poetbib.html/](http://www.leeds.ac.uk/classics/resources/poetics/poetbib.html/).
- Detailed description of the Greek manuscripts of the *Poetics* held at the Bibliothèque Nationale de France in Paris.

**Secondary Sources**

- *American Historical Review Forum*, from the *American Historical Review*, vol. 107, issue 1: How Revolutionary Was the Print Revolution? This is a debate between Elizabeth L. Eisenstein and Adrian Johns and it can be found at: [http://www.historycooperative.org/journals/ahr/107.1/ah0102000084.html](http://www.historycooperative.org/journals/ahr/107.1/ah0102000084.html).
<table>
<thead>
<tr>
<th>Mar 25</th>
<th>Norton</th>
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</thead>
</table>

**The Quantum Theory**

**Primary Sources**

- Einstein, A. "On a Heuristic Point of View About the Creation and Conversion of Light". In D. ter Haar, ed. The old Quantum Theory, Pergamon, 1967.

**Secondary Sources**


**Additional Secondary Source**

- Segre, E. *From X-rays to Quarks*. Freeman, 1980
| Feb 26 | **The Revolution in Chemistry**  
**Primary Sources:**  
- Antione Lavoissier, *Elements of Chemistry*, Chapters 1 and 2  
**Secondary Sources:**  
| --- | --- | --- |
| Mar 4 | **Thermodynamics and statistical mechanics**  
**Primary Sources**  
- Carnot, Sadi (1824) * Reflexions on the Motive Power of Fire (Extracts)*  
- Joule, J.P (1847) *On Matter, Living Force and Heat*  
- Thompson, William (1853) "On the Dynamical Theory of Heat" *Philosophical Magazine*  
- Maxwell, James Clerk (1860) "Illustrations of the Dynamical Theory of Gases" *Philosophical Magazine*  
**Secondary Sources**  
| Mar 18 | **SPRING BREAK** | Norton  |
|  | **19th C Theories of Electromagnetism and the Relativity Theory**  
**Primary Sources**  
- Maxwell, James Clerk. "On Action at a Distance". |  |