**Objective:** This course covers the development of the physical and natural sciences since the scientific revolution. The use of the scientific method in the development of foundation paradigms and the links between math, the physical sciences and biological sciences will be covered. We will focus on reading primary texts, and students will compare and contrast important scientific approaches and discoveries (particularly the position of Earth in universe, and origins of biological diversity).

<table>
<thead>
<tr>
<th>Week and Date</th>
<th>Lecture Topic</th>
<th>Chapter in Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 14 Jan</td>
<td>Introduction (discussion of &quot;science&quot;)</td>
<td></td>
</tr>
<tr>
<td>2 21</td>
<td>Martin Luther King’s Birthday – No Class</td>
<td></td>
</tr>
</tbody>
</table>
| 3 28          | Science today | NL: xi-xiv, 1-5, 15-19  
Sagan: Demon-haunted world, Ch. 2  
Sagan: Demon-haunted world, Ch. 12  
WM: Feynmann-Uncertainty of science  
ORAC: certainty & science (blog)  
WM: Aristotle-Science of nature |
| 4 4 Feb       | CH1: Greece (500-200 BC) | Aristotle: History of animals  
Aristotle: On the heavens |
| 5 11          | CH2: Rome & Islam (200BC-1000AD)  
Volume 5: Music of the Spheres  
Jacob Bronowski | Lucretius: On the nature of things  
Reader: Pliny-Natural history  
Ptolemy: Tetrabiblos  
Aquinas: Summa Theologica (+ Genesis) |
| 6 18          | CH3: Medieval Europe (1000-1400AD) | R WM: Galileo-Falling bodies  
Reader: Copernicus-On the revolutions.  
Bacon: Opus Majus |
| 7 25          | CH4: Renaissance (1400-1600AD) | NL: F. Bacon-Novum organum  
KTH: Descarte-Rules for…the mind |
| 8 4 Mar       | Midterm Exam |                |
| 9 11          | Spring Break – No Classes |                |
| 10 18         | CH5: Scientific revolution (1500–1700)  
Volume 12: Generation Upon Generation  
Jacob Bronowski | Redi: Experiments on generation of insects  
Hooke:Micrographia  
Jenner: Inquiry into effects of cowpox hybridization |
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Reading</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1 Apr</td>
<td>CH7:Science and empires (1800-1900)</td>
<td>NL: Bernard-Experimental medicine NL: Mendel-Experiments in plant NL: Darwin-Origin of species (Conclusion &amp; Struggle for existence) NL: Darwin: Descent of man</td>
</tr>
<tr>
<td>13</td>
<td>8</td>
<td>CH8: Entering the Atomic Age (Early 1900’s) Volume 9: Ladder of Creation Jacob Bronowski Darwin’s Ghosts</td>
<td>Ch. 1, 2, 3</td>
</tr>
<tr>
<td>14</td>
<td>15</td>
<td>Darwin’s Ghosts</td>
<td>Ch. 4, 5, 6</td>
</tr>
<tr>
<td>15</td>
<td>22</td>
<td>Darwin’s Ghosts</td>
<td>Ch. 7, 8, 9</td>
</tr>
<tr>
<td>17</td>
<td>29</td>
<td>Darwin’s Ghosts</td>
<td>Ch. 10, 11, 12</td>
</tr>
<tr>
<td>18</td>
<td>6 May</td>
<td>Final Exam</td>
<td></td>
</tr>
</tbody>
</table>

**Text:** Ede & Cormack. 2012. *A history of science in society: From philosophy to utility* 2nd Ed.


**Text:** Stott. 2012. *Darwin’s Ghosts*

**Web page:** https://westernonline.wiu.edu → Login → Username=Ecom username, Password=?

### COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing assignments</td>
<td>50</td>
</tr>
<tr>
<td>Discussion leading</td>
<td>75</td>
</tr>
<tr>
<td>Participation</td>
<td>100</td>
</tr>
<tr>
<td>Midterm exam (4 March)</td>
<td>100</td>
</tr>
<tr>
<td>Final exam (6 May)</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>425</strong></td>
</tr>
</tbody>
</table>

Participation: (1) weekly contributions to discussion, and (2) I will choose ANYONE (at random) to lead discussion on book chapters (Ede & Cormack, and Stott) (BOTTOM LINE: be prepared, AND participate).

Exams: essay

**Grades:** Based on your total of all possible points:
- A: ≥ 383
- B: ≥ 340
- C: ≥ 298
- D: ≥ 255
- F: < 255

**Attendance:** 2 (two) unexcused absences or 4 absences of ANY kind will result in “F” in course!
MAKEUPS
I do give makeups for extenuating circumstances and I will be the arbiter of whether a given circumstance is extenuating. However, my makeups are all essay and very few students have successfully passed my makeups in core courses.

SPECIAL NEEDS
In accordance with University policy and the Americans with Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. For the instructor to provide the proper accommodation(s) you must obtain documentation of the need for an accommodation through Disability Resource Center (DRC) and provide it to the instructor. It is imperative that you take the initiative to bring such needs to the instructor's attention, as he/she is not legally permitted to inquire about such particular needs of students. Students who may require special assistance in emergency evacuations (i.e. fire, tornado, etc.) should contact the instructor as to the most appropriate procedures to follow in such an emergency. Contact Disability Resource Center (DRC) at 298-2512 for additional services.

READ THIS:
STATEMENT ON CHEATING AND PLAGIARISM

Cheating will not be tolerated in this course. There are many possible ways to cheat such as copying another student’s exam, collaborating with another student on the exam or in communication with someone outside of the exam room (cell phones will be banned during exams). Should a student get caught doing the activities described above or similar activities she/he will receive a zero and I will file an Academic Integrity Incident Report as outlined in the Academic Integrity Policy at WIU: http://www.wiu.edu/policies/acintegrity.php.

I consider plagiarism more serious than simple cheating on exams. According the Student Academic Integrity Policy document plagiarism is defined as, "The submission of the work of someone else as one's own constitutes plagiarism." A more precise definition of plagiarism has been adopted by the Department of Biological Sciences:

The faculty of the Department of Biological Sciences ascribes to a definition of plagiarism as expressed by V. E. McMillan in Writing Papers in the Biological Sciences (Bedford/St.Martin's Press, New York, pg 16)

"Plagiarism is the theft of someone else's words, work, or ideas. It includes such acts as (1) turning in a friend's paper and saying it is yours; (2) using another person's data or ideas without acknowledgement; (3) copying an author's exact words and putting them in your paper without quotation marks; and (4) using wording that is very similar to that of the original source but passing it off as entirely your own even while acknowledging the source."

This includes information in textbooks or laboratory manuals, honors and masters theses, all writing assignments, and images. The faculty of the Department attempt to monitor student writing assignments (essay exams, papers, laboratory reports, and other writing assignments or exercises) for incidence of plagiarism. If plagiarism is found, the faculty will discuss the situation with the student and indicate to the student the penalty for this academic dishonesty.
Potential penalties include those cited in the academic dishonesty section of the WIU academic integrity web page:
http://www.wiu.edu/policies/acintegrity.php

Since we have a lot of written work with a narratives containing a review of pertinent literature the opportunity for plagiarism exists. However, I realize that many graduate students just starting their careers may not completely understand the correct way to cite scientific literature. This may result in inadvertent plagiarism which will result in minor grading penalties. **Blatant plagiarism will not be tolerated under any circumstances and I will be the arbiter of whether there is blatant plagiarism.** I will assign a student an F in this course and follow the appropriate procedures outlined in Sections III A and B of the SAIP. Should the student not agree, she/he can contest the decision according the procedures outlined in the SAIP. If any student has any questions regarding plagiarism, she/he should see me.

**Other Important Policies and Links from the Biological Sciences Website**

**Student Rights and Responsibilities**

Students at Western Illinois University have specific rights and responsibilities. These include such topics as grade appeals, academic integrity, and other important issues. If you are a student at WIU, you should be familiar with them. They can be read at the following website:

http://www.wiu.edu/provost/students/

**Grade Appeals Policy**

The official grade appeals policy of Western Illinois University is that students should contact the faculty member involved no later than two weeks after the start of the next semester (the semester after the one the class that is being appealed was in). There are specific protocols which must be followed. If you have a grade appeal read the website below:

http://www.wiu.edu/policies/gradeapp.php

**Final Exams**

Normally every course has a final exam. It must be given during the specified five-day time period, and no non-lab tests may be given during the last Thursday and Friday of classes. However, final lab exams may be given on these days. Students do not have to take more than three exams in one day. If you have more, there are specific steps you can take to resolve this issue. Read:

http://www.wiu.edu/policies/finexam.php