Professor Donald Rutherford
Office hours: W 4-5pm, F 12-1 pm, and by appt.
Office: HSS 8046
Email: drutherford@ucsd.edu

Teaching Assistant: Leo Moauro
Office hour: W 4-5 and 6-7 pm
Office: HSS 7089
Class website: http://ted.ucsd.edu

Description
This class examines the intersecting developments of philosophy and science in the seventeenth and eighteenth centuries from a variety of perspectives. We will study how modern science emerges in reaction to Aristotle’s theory of nature, the dominant account of the universe during the previous two millennia. We will consider how philosophical issues—concerning space, matter, motion and force—drive scientific inquiry, and how new philosophical theories of knowledge and human nature track the progress of science. And we will investigate the relation of the new science to traditional Biblical religion, noting the points at which the two come into conflict and the efforts made by scientists and philosophers to reconcile their theories with religious doctrines. Our modern world takes shape in the seventeenth century and is significantly defined by the rise of modern science. We will use the lens of philosophy to examine that development and its continuing importance for our understanding of ourselves and the world around us.

Required Text

All other readings for the class will be made available via the class TritonEd site.

Assignments and Grading (total 100 points)

- Two take-home midterms, each worth 25 points (the first midterm will be distributed on January 27 and will be due at 11:59 pm on February 3; the second exam will be distributed on February 24 and will be due at 11:59 pm on March 3). All exams will be submitted on TritonEd via Turnitin.com.

- Weekly quizzes, given in section. Each will be worth 2 points. You may count your best 5 quizzes for a total of 10 points. No makeup quizzes will be given.

- Section participation, worth 10 points.

- Final examination, worth 30 points; cumulative but concentrating on material from the latter part of the course.

- Both midterms and the final examination must be taken to pass the class.

Other Important Information

- Regular attendance and completion of the required reading ahead of lectures are critical. Engagement with the course presupposes that you have done the assigned reading and are prepared to discuss it in class.
• Use of computers and other electronic devices is allowed in class for legitimate pedagogical purposes, not for web surfing or personal communications. I will make my slides available after class, so there is no reason to try to write down everything on them. In general, you should remain as focused on the content of the lecture as possible.

• Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to Faculty (please make arrangements to contact me privately) and to the OSD Liaison in the department in advance so that accommodations may be arranged.

• 858.534.4382 (phone) I osd@ucsd.edu (email) I http://disabilities.ucsd.edu (website)

• If accommodations are needed for religious or other reasons that conflict with your attendance or participation in the course, please discuss the matter with me as soon as possible.

• Extensions will only be given to those who present evidence of a valid excuse in a timely manner. Note that computer or printer failure does not usually constitute a valid excuse, so be sure to take all necessary precautions to safeguard your work (backup, backup, backup!). If at any time you believe you have a legitimate claim to an extension, bring it to my attention as soon as possible (e.g., if you are going to be out of town for a legitimate purpose, such as a university-sponsored performance, athletic event, conference, or the equivalent). Unexcused late exams will be penalized the equivalent of one +/- letter grade per day.

• Students should familiarize themselves with the UCSD Policy on Integrity of Scholarship: http://students.ucsd.edu/academics/academic-integrity/policy.html. There is a zero-tolerance policy on plagiarism in this class. If you are pressed for time or blocked, it is always better to talk with me and to take the late penalty if necessary, than to submit work that is not your own. All written work will be submitted to turnitin.com, so there is a very high probability that plagiarism will be detected. Anyone who is found to have plagiarized work will receive an F for the course. Additional disciplinary penalties may be assigned by the UCSD administration. Receipt of this syllabus constitutes an acknowledgement that you are responsible for understanding and acting in accordance with UCSD guidelines on academic integrity.

Schedule of Classes and Reading Assignments

UNIT 1  THE SCIENTIFIC REVOLUTION: FROM ARISTOTLE TO GALILEO

WEEK 1
January 7  Introduction
January 9  Aristotelian Physics
Reading: Aristotle, excerpts from Physics, bks. 2 and 4 (Matthews, 7-19) and On the Heavens, bk. 1, parts 2-3 (TritonEd)
January 11  Scientific Explanation
Reading: Aristotle, excerpts from Posterior Analytics (Matthews, 26-32)

Week 2
January 14  The Heliocentric System
Reading: Nicholas Copernicus, excerpts from Commentariolus (1512) and On the Revolution of the Heavenly Spheres (1543) (Matthews, 36-44)
January 16  The Scientific Mind
Reading: Francis Bacon, New Organon (1620), Part 1, secs. 1-65 (TritonEd)
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<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>January 18</td>
<td>Scientific Methods</td>
<td>Reading: Bacon, <em>New Organon</em>, Part 1, sec. 92-117 (TritonEd)</td>
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<td>Week 3</td>
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<td>January 21</td>
<td>MLK DAY – No Class</td>
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<td>January 23</td>
<td>Galileo’s Challenge to the Catholic Church</td>
<td>Reading: Galileo Galilei, excerpts from <em>The Sidereal Messenger</em> (1610) (TritonEd)</td>
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<td>Week 4</td>
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<td>January 28</td>
<td>Galilean Science</td>
<td>Reading: Galileo, excerpts from <em>The Assayer</em> (Matthews, 56-61) and <em>Two New Sciences</em> (1638) (Matthews, 81-86)</td>
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<td>January 30</td>
<td>Against Aristotle</td>
<td>Reading: Galileo, excerpts from <em>Dialogue concerning the Two Chief World Systems</em> (1632) (Matthews, 61-71)</td>
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<td>February 1</td>
<td>The Tower Argument</td>
<td>Reading: Galileo, excerpts from <em>Dialogue concerning the Two Chief World Systems</em> (Matthews, 71-81)</td>
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<td>UNIT 2</td>
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<td>Week 5</td>
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<td>February 4</td>
<td>Descartes’s Project</td>
<td>Reading: René Descartes, <em>Discourse on the Method</em> (1637), parts 1-2, 4-5 (TritonEd); <em>Principles of Philosophy</em>, “Letter from the Author” (Matthews, 94-97)</td>
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<td>February 6</td>
<td>Descartes on Matter and Motion</td>
<td>Reading: Descartes, <em>Principles of Philosophy</em> (1641), part 2, secs. 1-35; part 3, secs. 1-30 (TritonEd)</td>
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<td>February 8</td>
<td>Descartes on Laws of Nature and Force</td>
<td>Reading: Descartes, <em>Principles</em>, part 2, secs. 36-64 (TritonEd)</td>
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<td>Week 6</td>
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<td>February 11</td>
<td>Experimental Philosophy</td>
<td>Reading: Robert Boyle, excerpts from <em>New Experiments Physico-Mechanical, Touching the Spring of the Air</em> (1660) (TritonEd)</td>
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<td>February 13</td>
<td>The Mechanical Philosophy</td>
<td>Reading, Robert Boyle, excerpts from <em>The Excellency and Grounds of the Corpucular or Mechanical Philosophy</em> (1674) (Matthews, 109-23)</td>
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<td>February 15</td>
<td>Self-Moving and Self-Knowing Matter</td>
<td>Reading: Margaret Cavendish, <em>Observations upon Experimental Philosophy</em> (1666), chap. 35 (TritonEd)</td>
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Week 7
February 18  President’s Day – No class

February 20  Occasionalism
Reading: Nicolas Malebranche, *Search after Truth* (1674), bk. 6, pt. 2, chs. 3 and Elucidation 15 (excerpt) (TritonEd)

February 22  Against Final Causes
Reading: Benedict Spinoza, *Ethics* (1677), Appendix to Part 1 (TritonEd)

Week 8
February 25  The Invention of Modern Physics
Reading: Isaac Newton, Preface to the *Principia* (1687) (Matthews, 137-9) Definitions and Laws (TritonEd)

February 27  Space, Time and Force
Reading: Newton, *Principia*, Scholium (Matthews, 139-46); Part III, “Rules for Reasoning” (Matthews, 146-8)

March 1  Gravity and the Argument from Design
Reading: Newton, *Principia* (2nd edition), General Scholium (Matthews, 148-53); *Optiks* (1717), Query 31 (Matthews, 153-8)

UNIT 3  A SCIENCE OF HUMAN NATURE

Week 9
March 4  Naturalizing Human Beings
Reading: David Hume, Introduction to *A Treatise of Human Nature* (1739) (TritonEd)

March 6  Skepticism about Induction
Reading: *An Enquiry concerning Human Understanding* (1748), sec. 4 (TritonEd)

March 8  The Basis of Causal Reasoning
Reading: *An Enquiry concerning Human Understanding*, sec. 5 (TritonEd)

Week 10
March 11  Liberty and Necessity
Reading: Hume, *An Enquiry concerning Human Understanding*, sec. 8 (TritonEd)

March 13  Animal Reason versus Scientific Reasoning
Reading: Hume, *Enquiry concerning Human Understanding*, sec. 9 (TritonEd)

March 15  Review

Monday, March 18  FINAL EXAM, 11:30 am-2:30 pm