Honors Seminar 175: Science & Religion – Fall 2011
Tuesday & Thursday 11:30 AM-1:00 PM in Halsey 309

Instructor: Dr. Dennis Rioux
Phone: x4429  Email: rioux@uwosh.edu  Office: Halsey 347
Office Hours: MWF 10:20-11:20 AM, T 9:40-10:40 AM
Schedule: http://www.phys.uwosh.edu/rioux

General: Science and religion are two approaches to understanding the world around us. This honors seminar will explore a variety of issues dealing with science and religion. Among other things, we will explore similarities and differences in their styles of inquiry and their expectations, how they may or may not conflict with each other, and whether or not they can inform each other.

Texts: No single text exists for this course. Copies of basic physics texts will be available for you to check out if you want one for reference. The required readings from various sources will be available on the class web site in PDF format.

Web Page: http://www.phys.uwosh.edu/rioux/honors A link to this site is provided on D2L.

Grading: A combined total of 1000 points for both halves of this course will be assigned according to the following breakdown and final grades assigned according the following scale:

<table>
<thead>
<tr>
<th>Components</th>
<th>Grade Scale</th>
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<tbody>
<tr>
<td>Summer Assignment</td>
<td>930-1000</td>
</tr>
<tr>
<td>Debates</td>
<td>895-929</td>
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<tr>
<td>Final Exam</td>
<td>860-894</td>
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<tr>
<td>Ridgely Module</td>
<td>825-859</td>
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<td>Rioux Module</td>
<td>790-824</td>
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<th>Grade</th>
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<tbody>
<tr>
<td>A</td>
<td>720-754</td>
<td>C</td>
<td>615-649</td>
<td>D</td>
<td>0-579</td>
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<tr>
<td>A–</td>
<td>685-719</td>
<td>C–</td>
<td>650-684</td>
<td>D+</td>
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<td>B+</td>
<td>650-684</td>
<td>D+</td>
<td>700-724</td>
<td>D–</td>
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<tr>
<td>C+</td>
<td>580-614</td>
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<td>755-789</td>
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Debates: We will decide the topics together in the first few weeks of class. The purposes of the debates are to: 1) explore a topic of interest in more depth; 2) sharpen your analytical and writing skills, and 3) help you synthesize and assess the course material. You will be divided into four teams. Within each team you will be assigned to be for or against the announced position. You will be expected to do research outside of class and to meet with one or both of the professors prior to your debate. You will be graded on your ability to represent your side of the argument fairly, to counter the arguments from the other side accurately, and to incorporate both the themes from the course and outside research into your argument effectively.
The components for this half of the Honors Seminar include:

**Module:**

**In-Class work and Participation (200 pts)** – The purpose of discussion is to learn via the consideration of issues and concepts in a larger group. Participation includes both regular attendance and reading the assigned material before you arrive. You must come to class prepared to discuss the assigned readings. For those who are shy, be reassured that it is not just the quantity of your participation that matters. Fewer comments that show a careful and thoughtful reading of the texts are important.

- For participation you will be evaluated on how relevant and insightful your comments are. This includes your ability to ask probing questions of others that facilitate, rather than stop, discussion, and your willingness to engage respectfully with a wide variety of perspectives, whether these perspectives are presented by classmates, readings, or the professor.
- You are expected to be on time, prepared, and paying attention. To demonstrate that you are paying attention you should be participating in the discussion and/or taking notes. You should not be carrying on side conversations with classmates, doing other work during class, or packing up early.
- To facilitate our classroom discussion and a respectful environment please turn off your cell phone during class and keep it out of sight. Finally, to prevent distractions and facilitate conversation, no laptops will be permitted in class.
- Attendance is required at each scheduled class meeting and unexcused absences will negatively affect your grade.

**Homework & Writing Assignments (200 pts)** – Various homework and writing assignments will be made over the course of the semester. Expectations for written work and homework problems will be outlined in each assignment.

- All assignments must be completed in accordance with the UWO Honor Code. Failure to abide by the rules of this community will result in failure of the course. Plagiarism is a violation of the honor code: "Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors." (UWS 14.01 Wisconsin Administrative Code)

**More:**

You need not have taken a previous physics class to be successful in this course. Physical concepts will be presented at an introductory level appropriate for college students without a technical scientific background. I encourage you to take advantage of a variety of resources if you are not satisfied with your understanding: texts, tutors, fellow students, me, et cetera. If you cannot meet me during scheduled office hours I am happy to find an alternate time that is mutually agreeable.
**ask questions** during class even if you think it is minor or silly or stupid — that's why we are here together, and it is my experience that most of the time you are not the only one with that question.

The math we use will consist of algebra, geometry, trigonometry, and logarithms. I am happy to offer as much assistance and encouragement as is necessary to help you master the math required for this course. **Bring a scientific calculator** (one that has trig and log functions) to class each day.

**Tentative Schedule & Reading List**

Use the following table to help keep track of which classroom you should be in and what work you should prepare for each session:

<table>
<thead>
<tr>
<th>Date</th>
<th>Classroom</th>
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<th>Date</th>
<th>Classroom</th>
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<tbody>
<tr>
<td>Sept 8</td>
<td>Joint Meeting</td>
<td>Oct 13</td>
<td>Rioux</td>
<td>Nov 15</td>
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<td>Oct 18</td>
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<td>Nov 29</td>
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<td>Sept 22</td>
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<td>Oct 27</td>
<td>Rioux</td>
<td>Dec 1</td>
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<td>Sept 27</td>
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<td>Nov 1</td>
<td>Ridgely</td>
<td>Dec 6</td>
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<td>Nov 3</td>
<td>Ridgely</td>
<td>Dec 8</td>
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<td>Oct 4</td>
<td>Ridgely</td>
<td>Nov 8</td>
<td>Joint Meeting</td>
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**{Sept 8}**

*Introduction: Joint Class Discussion*

“The Limits of Science” P.B. Medawar

**{Sept 13} and {Sept 15}**

*What is religion? What is science? What does it mean to “believe” in each?*

“On the Non-Existence of Scientific Method” Karl Popper

“The Scientific Method?” Barry Casper & Richard J. Noer

“Hall of Mirrors” Richard Dawkins

**{Sept 20} and {Sept 22}**

*Belief and Science: In what did Einstein believe? What’s wrong with this question?*

“Einstein’s God” Krista Tippett

“A Deeply Religious Non-Believer” Richard Dawkins

“God Enough” Steve Paulson’s interview with Stuart Kauffman

**{Sept 27 & 29} and {Oct 4 & 6}**

*Predestination and Determinism: Science and Religion Together*

“Religion and the Enlightenment” James M. Byrne
“Isaac Newton” James Gleick
“The God of Isaac Newton” John Brooke

{Oct 11 & 13} and {Oct 18 & 20}
From Alchemy to Spiritualism
“The Old Physics” I. Bernard Cohen
“The Secret Life of an Alchemist” Jan Golinski
“Making Waves” Brian L. Silver
“James Clerk Maxwell and Religion” Paul Theerman

{Oct 25 & 27} and {Nov 1 & 3}
From Common Sense to Quarks
“Prologue: The Century of Science” Robert D. Purrington
“Special Theory of Relativity” Paul G. Hewitt
“Time” Paul Davies

{Nov 8 & 10}
Joint Class Debates on Issues of Science & Religion

{Nov 15 & 17 & 22} and {Nov 29 & Dec 1 & 6}
Quantum Leaps for Science and Religion
“Introducing Quantum Theory” J.P. McEvoy & Oscar Zarate
“The New Quantum Universe” Tony Hey & Patrick Walters
“Quantum Theory: A Very Short Introduction” John Polkinghorne
“The Quantum Factor” Paul Davies
“Quarks, Chaos & Christianity” John Polkinghorne
“The Accidental Universe” Alan Lightman

{Dec 8} and {Dec 13}
Special Topic – The Anthropic Principle
“Is There Anyone There?” John Polkinghorne

{Dec 15}
Final Exam Period