PHIL 1400  Philosophy and Science  
section 220R  Fall, 2014  
Course Syllabus

Course Information

meetings time and place:
  Monday, Wednesday, and Friday
  1:00 pm to 1:50 pm
  in Buckingham S106

Instructor:  Mike Zerella  
email:  zerella@colorado.edu  
office hours:  Wednesdays 12pm to 1pm in Buckingham S120  
Fridays 11am to 12pm in Kittredge Central

Required Texts

All readings available electronically on Desire2Learn

About the Course

This course will cover our current understanding of the scientific method, and how we establish and change scientific theories in the face of inevitable human limitations. We also will discuss some philosophically interesting theories in science, and whether there are limits to scientific investigation.

Graded Assignments

There will be tests, homework, and papers (see below for due dates). The tests will be short answer and multiple choice questions designed to make sure you are keeping up with the main theories and arguments in the course. The homework will be short writing assignments. The papers will be longer essays in which you are expected to explain and assess a specific issue of your own choosing. The format of the final exam will be the same as the tests, and will cover all of the major themes of the course. Since philosophy requires that we be able to express and discuss ideas, participation is also a required element of the course. To participate, you may speak up during class discussions, or post in our online discussions, or you may speak with me after class or during office hours. Regular attendance in class is also expected in order to fulfill the requirements of the course.

The following lists the relative weights of the different assignments in determining overall grade.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Participation</td>
<td>5 %</td>
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<tr>
<td>Homework</td>
<td>25 %</td>
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<tr>
<td>Tests</td>
<td>25 %</td>
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<tr>
<td>Paper</td>
<td>25 %</td>
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<tr>
<td>Final Exam</td>
<td>20 %</td>
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Important Dates:
   Weekly homework due every week before 6pm on Friday (except during paper or test weeks)
   Test #1 in class September 26th
   Paper #1 due by October 17th
   Test #2 in class November 14th
   Paper #2 due by December 12th (last day of class)
   Final Exam on Saturday, Dec. 17th, 10:30 am in Buckingham S106

Late work and Missed Exams
   Unfortunately, I cannot accept late work or reschedule missed exams without an official
   medical or legal excuse. Check your personal calendar to make sure you will be in town for all due
   dates. *I cannot make last-minute accommodations for missed assignments or due dates!!*

Attendance Policy
   Students are expected to attend every class meeting. Points for attendance will be included in
   your participation grade. As per CommRAP policy, missing a total of three weeks worth of class (9
   class meetings) without prior permission will result in automatic failure for the course.

Reading List (not every topic has an associated reading)

Scientific Methods of Testing
   Carl Hempel “Scientific Inquiry: Invention and Test”
   Karl Popper “The Problem of Induction”
      “Science: Conjectures and Refutations”
   Harry Frankfurt “On Bullshit”
   Carol Cleland “Historical vs. Experimental Science”

Problems of Bias and Theory Choice
   N.R. Hanson, “Observation”
   Thomas Kuhn “The Structure of Scientific Revolutions” (excerpt)
      “The Logic of Discovery or the Psychology of Research?”
   Paul Feyerabend “Science and Myth”
   Richard Dawkins “Is Science a Religion?”
   Philip Kitcher “Believing Where We Cannot Prove”
   Kathleen Okruhlik “Gender and the Biological Sciences”

Unobservable Entities
   Grover Maxwell “The Ontological Status of Theoretical Entities”
   J.R. Brown “Explaining the Success of Science”

Reductionism and the Limits of Science
   Peter Atkins “Science Can Explain Everything”
   Martin Gardener “Science and the Unknowable”
   Timothy Williamson “What Is Naturalism?”
   Jerry Fodor “Special Sciences”
**Topics** (not every topic has an associated reading)

**Overview of Science and Philosophy of Science**
General features of science
Topics in philosophy of science
Logic

**Scientific Method of Testing**
Carl Hempel “Scientific Inquiry: Invention and Test”
Karl Popper “The Problem of Induction”
  “Science: Conjectures and Refutations”
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**Some Contemporary Theories**
General Relativity
Quantum Mechanics
Evolution by Natural Selection
Official Syllabus Statements:

(1) **On Disabilities:** If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Willard 322, and http://www.Colorado.EDU/disabilityservices

If you have a temporary medical condition or injury, see guidelines at: http://www.colorado.edu/disabilityservices/go.cgi?select=temporary.html

Disability Services' letters for students with disabilities indicate legally mandated reasonable accommodations. The syllabus statements and answers to Frequently Asked Questions can be found at: http://www.colorado.edu/disabilityservices

(2) **On Religious Observances:** Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. See full details at: http://www.colorado.edu/policies/fac_relig.html

(3) **On Classroom Behavior:** Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at: http://www.colorado.edu/policies/classbehavior.html and at: http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code

(4) **On Discrimination and Sexual Harassment:** The University of Colorado at Boulder policy on Discrimination and Harassment, the University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships apply to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of sexual harassment or discrimination or harassment based upon race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH, the above referenced policies and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at: http://www.colorado.edu/odh

(5) **On the Honor Code:** All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at: http://www.colorado.edu/policies/honor.html and at: http://www.colorado.edu/academics/honorcode/