

Scientific Revolutions
CORC. 3306
Fall 2012

Instructor: Dr. Jordan Stein
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Office Location: 3316 Boylan Hall
Office Hours: T/TH 3:35-4:05, and by appointment

Course Description:

We will examine the underlying principles of scientific revolutions, asking such questions as: Why do scientific theories change over time? Can we extract from the historical record common features of scientific change? Specific examples will be drawn from such disciplines as physics, astronomy, chemistry, and biology. One goal of this inquiry is a better conceptual understanding of scientific theories and progress.

Course Objectives:

- Students will gain insight into the foundations, theories, and issues of modern science.
- Students will acquire an understanding of a complexity of issues involved in formulating, testing, rejecting, and adopting scientific hypotheses.
- Students will acquire an understanding of scientific knowledge and the nature of scientific inquiry, of difficulties, errors, and controversies in the acquisition of scientific knowledge, and of how scientific knowledge has been acquired over time.
- Students will acquire an understanding of research methodology used in the sciences.
- Students will develop skills of critically examining the nature of scientific theories, and justification for the rejection of theories and adoption of new theories.
- Students will be able to communicate thought relating to scientific theories and theory change orally.
- Students will be able to develop a basis for interpreting and evaluating scientific literature, and philosophical writings that examine scientific subjects.
- Students acquire an understanding of the history and rationale for theory change, and the relationship of scientific revolutions to the shaping of modern science.

Readings:

- Bowler, Peter J. and Morus, Iwan Rhys, *Making Modern Science: A Historical Survey*, University of Chicago Press, 2005.

- Brewer, William F. and Lambert, Bruce. L, “The Theory-Ladenness of Observation and the Theory-Ladenness of the Rest of the Scientific Process,” *Philosophy of Science*, 68, 2001.
- Chalmers, A.F., *What is This Thing Called Science?* Third Edition. Hackett Publishing Company, Inc., 1982.
- Kuhn, Thomas S., *The Structure of Scientific Revolutions*. Third Edition. University of Chicago Press, 1996.

Schedule:

Week	Topic	Reading
1-3	Naive Inductiveism	Chalmers, Ch. 1, 3; 4 (optional); Brewer and Lambert
4-9	Kuhn; Midterm	Kuhn, Ch. 2-7, 9; Bowler and Morus, Ch. 2-3, 6; Chalmers, Ch. 8 (optional)
10-12	Realism and Instrumentalism	Chalmers, Ch. 15
13-14	Science and Human Nature	Bowler and Morus, Ch. 15
15	Review	

*This schedule is subject to change.

Grading:

- Attendance and Participation (10%)
- Term paper (25%);
- Midterm (25%);
- Cumulative final (20%)
- Response Papers (20%)

Final grades will not be based on a curve; however, exam grades will be curved if and only if the grade distribution clearly indicates that the exam was unduly difficult.

Important Dates:

- Response Paper 1 Due: September 27
- Response Paper 2 Due: October 16
- Midterm Examination: October 23
- Term Paper Due: Last Day of Class
- Final exam date as set by the university

Essay Policy and Incompletes:

- Late papers will be accepted only in cases of extenuating circumstances (i.e., severe illness, death in the family, etc.). Papers must be submitted in class on the assigned day, and not by email. Late papers will be accepted at my discretion, and may result in a grade deduction.
- Papers must be of the assigned length, typed in standard font, double spaced, and have standard margins of 1.25" on the side and 1" on the top and bottom.
- No revise and resubmit option.
- Incompletes will be granted only in exceptional circumstances.

Classroom Etiquette:

Classroom behavior should be consistent with the goals of academic learning. We must take care to treat one another with courtesy and respect. Certain behaviors can interfere with our stated goals, and should be avoided. These include: consistent late arrivals, engaging in irrelevant conversations and note passing, not turning your cell phone off, and leaving class to take a phone call. By violating these guidelines you are disrupting class; if you do so persistently, it can harm your grade. Recording lectures is not permissible except with written permission from the office of disabilities.

University Policy on Academic Integrity:

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for implementing that policy can be found at this site: <http://www.brooklyn.cuny.edu/bc/policies>. If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member **MUST** report the violation.

University Statement on Disability Services:

In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at 718-951-5538. If you have already registered with the Center for Student Disability Services please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.

Policy of Non-attendance Regarding Religious Belief

- New York State Education Law (Title I, Article 5, Section 224-a) requires that we “make available to each student who is absent from school, because of his [or her] religious beliefs, an equivalent opportunity to make up any examination, study or work requirements which he [or she] may have missed because of such absence on any particular day or days.” Refer to the College catalog for additional information.