

University of California, Davis
Department of Philosophy
PHILOSOPHY OF SCIENCE
PHI 210, Winter 2011
2275 SSH, Thurs 3:10-6 PM

Contact information

Instructor: Professor Roberta Millstein

Office: 2287 Social Sciences and Humanities (aka SSH, Death Star: corner of 3rd and A)

Office Hours: Tues 3:10-4:10 PM, Thurs 12:30-1:30 PM, and by appointment

E-mail: RLMillstein@UCDavis.edu (*the best way to reach me*)

Phone: 530-554-1398 (Skype voicemail)

Philosophy Dept. Office, my mailbox: 1240 SSH **Philosophy Dept. Phone:** 530-752-0703

Required readings (note that the books are on reserve at the library)

Required (and optional) readings available on course website on SmartSite, <https://smartsite.ucdavis.edu/>

Across the Boundaries: Extrapolation in Biology and Social Science, by Daniel P. Steel (5 chapters)

Explaining the Brain: Mechanisms and the Mosaic Unity of Neuroscience, by Carl F. Craver (3 chapters)

Course description

This graduate seminar will focus on *mechanisms* – more specifically, on the recent literature in the philosophy of science that has been dubbed “the new mechanistic philosophy.” We will begin with an overview of Wesley Salmon’s earlier work, which is seen as a precursor by some and a foil by others, before discussing the works by Machamer, Darden, and Craver (MDC) and Glennan that sparked the recent discussion. From there, we will explore some of the general issues raised by mechanisms: explanation, reduction, causal relevance, and extrapolation. Finally, we will look at the question of whether natural selection is a mechanism and then examine some hot-off-the-presses alternatives to the earlier accounts.

Course requirements

Your grade will be based on the following:

10% - In-class participation

10% - Online participation

20% - Coordination of seminars

60% - Term paper - due by 5 PM on Friday, **March 18**

In-class participation - You are expected to come to all classes having done the readings and you are expected to participate in class discussions.

Online participation - Post to the SmartSite Forums **by 2 PM before every seminar** concerning the readings for the day – ask questions, raise objections, give reflections, etc.

Coordination of seminars: You will coordinate at least one (probably more) seminar using a visual aid such as handout or PowerPoint-type slides – contact me before class for help with photocopying or projector set up. Your job as coordinator is to stimulate and lead discussion. So, you should **1)** Give enough of a summary of the readings to stimulate discussion, but don’t attempt a point-by-point summary (we can

always turn to the article during discussion if necessary). Be sure to provide an overview of the overall argument. Seek out additional references if necessary. And, **2)** raise issues for discussion (not simply, “what did you think about that?”). As coordinator, it is OK if there are parts of the articles that you didn’t understand; ask those questions for group discussion.

Term paper: Your paper may analyze any of the readings discussed in class, any of the optional readings, or offshoots of those readings (follow the citations of class readings or look for papers that cite the class readings). Contact me if you wish to do something other than the above. A sketch/outline of your term paper is due by Friday, **March 4**.

Prepare your paper (more or less) in the style of a *Philosophy of Science* article. Your paper should be approximately 5000 words (the length of a Philosophy of Science Association conference paper).

Important note on plagiarism/cheating: It is a violation of the Code of Academic Conduct to turn in work that is not your own. This includes: turning in the work of another student with your name on it, buying/copying a paper off the Internet, using the words *or* ideas of others without proper quotation and citation. In accordance with Regulation 550 of the Davis Division of the Academic Senate, **a grade of "0" will be assigned to assignments on which cheating, plagiarism or any other form of academic dishonesty is admitted or determined to have occurred by proper adjudication.** If you have trouble with the class material or have personal issues that prevent you from doing your work, come talk to me.

Tentative Schedule - All dates and readings are subject to change.

Date	Author-year	Paper/chapter title	Coor.
Jan 6	Darden 2008	Thinking again about biological mechanisms	RLM
	Hitchcock 1995	Salmon on Explanatory Relevance	RLM
Jan 13	Machamer, Darden, & Craver 2000	Thinking about mechanisms	
	Glennan 1996	Mechanisms and the Nature of Causation	
Jan 20	Fehr 2004	Feminism and Science: Mechanism Without Reductionism	
	Bechtel and Abrahamsen 2005	Explanation: a mechanist alternative	
Jan 27	Craver 2007, Ch. 3	Causal Relevance and Manipulation	
	Craver 2007, Ch. 4	The Norms of Mechanistic Explanation	
Feb 3	Craver 2007, Ch. 5	A Field Guide to Levels	
	Craver and Bechtel 2007	Top-down causation without top-down causes	
Feb 10	Steel 2008, Ch. 1	Extrapolation and Heterogeneity (short intro to book)	
	Steel 2008, Ch. 2	Interventions, Causal Effects, and Causal Relevance	
	Steel 2008, Ch. 3	Causal Structure and Mechanisms	
Feb 17	Steel 2008, Ch. 4	The Disruption Principle	
	Steel 2008, Ch. 5	Extrapolation, Capacities, and Mechanisms	
Feb 24	Skipper and Millstein 2005	Thinking about evolutionary mechanisms: natural selection	
	Glennan 2009	Productivity, relevance and natural selection	
Mar 3	Illari and Williamson 2010	Function and organization: comparing the mechanisms of protein synthesis and natural selection	
	Craver 2009	Mechanisms and natural kinds	
Mar 10	Torres 2009	A Modified Conception of Mechanisms	
	Dowe 2010	The causal-process-model theory of mechanisms	