

## SYLLABUS

**Course Title:**           **Advanced Topics in Philosophy of Science**

**Course Number:**       **PHIL 495 (Fall 2011)**

**Ticket Number:**       **17304**

**Prerequisites:** Prerequisites: 6 units of philosophy including at least one of PHIL 325, 330, 350 or 355.

### **CONTACT INFORMATION:**

Instructor:               Dr. Weimin Sun  
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Phone:                    818-677-6461 (voice mail available at this number)  
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Office Hours:            Tues. & Thurs. 2.00-3.30 PM, or by appointment

### **Catalog Description:**

An advanced study of one or more key issues in the philosophy of science or philosophical issues in the special sciences, such as explanation, causality, laws and theories, theory evaluation, realism and anti-realism, and relations between the physical and social sciences.

### **Instructor Description:**

This course aims to give an in-depth study of some key issues in contemporary philosophy of science. In particular, we'll examine the realism-antirealism debate. Students may pick their own topics of interest for the class.

### **Course Objectives:**

- Students will have a good understanding of contemporary issues in philosophy of science.
- Students will practice and demonstrate their philosophical reading skills.
- Students will practice and demonstrate their philosophical writing skills.
- Students will practice and demonstrate their skills in presenting philosophical ideas and arguments clearly and effectively.

**Textbooks:** (You may decide to buy the textbooks after the first class meeting.)

**Required:** [PoS] *Philosophy of Science* ed. by: Lange, Marc ISBN: 1-4051-3034-2. Blackwell Publishing

**Recommended:** [SI] *The Scientific Image* by Van Fraassen, Bas ISBN: 9780198244271. Oxford University Press

**Other required or recommended readings** will be available online at course Moodle site.

### **COURSE REQUIREMENTS AND GRADING:**

Attendance is required. Active participation is a crucial part of class participation grade.

This is a 400 seminar level course. All students are required to finish the assigned readings before class meetings, and should be ready to participate in class discussions centered on the reading assignments. I won't explain all the details of the readings, but will focus on the key elements of readings and the questions arising from your reading. Your participations are essential to the quality and the success of this class.

The class will start with the realism debate. We'll use Bass van Fraassen's influential book "The Scientific Image" as the primary text. We'll carefully discuss his arguments against realism and introduce his constructive empiricism, and supplement it with other related readings. Students will then have a chance to pick some other topics from the Lange book for the remainder of the semester (about four weeks). Possible topics include:

- Models in philosophy of science (extension of van Fraassen's model approach to scientific theory)
- Confirmation theory and theory choice (esp. the influential Bayesian Confirmation theory);
- Causation (another active field of research that overlaps with metaphysics)
- Laws of nature;
- Natural kinds;
- Philosophy of Modern Physics (deep puzzles arising from more and more abstract and complex physics, which aims to presents us the deep reality of the world)

### **Grading components:**

Participation (including attendance):	20%
Short Writing Assignments (2):	20%
Midterm paper:	20%
Final Paper:	40%

The course will assign plus-minus grades. An **A** grade is equivalent to 92% or above of the course grade. An A- is between 90% and 92%. A B+ is between 88% and 90%. Others are similar.

## COURSE SCHEDULE and READING ASSIGNMENTS

Date	Content	Reading Assignment
Week 1: 8/30	Introduction class; Realism/Empiricism Debate	SI ( <i>Scientific Image</i> by van Fraassen): <i>Introduction</i> (available on Moodle)
9/2	Introduction to Realism	<b>SI:</b> Ch.2: 1.1: Statement of Scientific Realism Recommend: SEP entry on <i>Scientific Realism</i> , section 1 ( <a href="http://plato.stanford.edu/entries/scientific-realism/">http://plato.stanford.edu/entries/scientific-realism/</a> )
Week 2: 9/6	Alternatives to Realism Constructive Empiricism	<b>SI:</b> Ch.2: 1.2,1.3;
9/8	Theory/observation dichotomy	<b>SI:</b> Ch.2: Section.2 Recommend: Maxwell “ <i>The Ontological Status of Theoretical Entities</i> ”(available on Moodle)
Week 3: 9/13	Inference to the Best Explanation	<b>SI:</b> Ch.2: section 3; Recommend: Thagard: <i>The Best Explanation</i> <a href="http://cogsci.uwaterloo.ca/Articles/best-explanation.pdf">http://cogsci.uwaterloo.ca/Articles/best-explanation.pdf</a> (available on Moodle)
9/15	Limits of the Demand for explanation	<b>SI:</b> Ch.2: Section 4
Week 4: 9/20	The Principle of Common Cause	<b>SI:</b> Ch.2: Section 5
9/22	Limits to Explanation	<b>SI:</b> Ch.2: Section 6 Recommend: Sellars “ <i>The Language of Theories</i> ” (available on Moodle and in <b>PoS</b> )
Week 5: 9/27	The Ultimate Argument (No Miracle Argument) – Putnam	<b>SI:</b> Ch.2: Section 7
9/29	Against Convergent Realism	Laudan: <i>A Confutation of Convergent Realism</i> (available on Moodle)
Week 6: 10/4	Experimental realism	Hacking: <i>Experimentation and Scientific Realism</i> (available on Moodle)
10/6	NOA	Fine: <i>The Natural Ontological Attitude</i> (available on Moodle)
Week 7: 10/11	Structural realism	Worrall: <i>Structural Realism—the best of Both Worlds?</i> (available on <b>PoS</b> # 15, and on Moodle) Recommended: SEP entry <a href="http://plato.stanford.edu/entries/structural-realism/">http://plato.stanford.edu/entries/structural-realism/</a>
10/13	What is Structural realism?	Ladyman: <i>What is Structural Realism</i> ; (available on Moodle)

Week 8: 10/18	Structural empiricism?	van Fraassen: <i>Structure--its shadow and substance</i> (available on Moodle)
10/20	The Logical Positivist picture of scientific theory	Hempel: <i>The Theoretician's Dilemma</i> (in <b>PoS</b> : #11); (full version available on Moodle).
Week 9: 10/25	Models and Empirical Content of theories	<b>SI</b> : Ch.3: sections 1-3
10/27	Theories and their extensions	<b>SI</b> : Ch.3: section 4-5;
Week 10: 11/1	The failure of syntactic approach and the way out	<b>SI</b> : Ch.3: section 6, 7.
11/3	Limits to empirical descriptions & the new picture of theories	<b>SI</b> : Ch.3: section 8, 9
Week 11: 11/8	TBA	<b>Possible topics:</b> Models in philosophy of science confirmation theory and theory choice; causation; laws of nature; natural kinds; philosophy of modern physics.
11/10	TBA	
Week 12: 11/15	TBA	
11/17	TBA	
Week 13:	Thanksgiving Break	
Week 14: 11/29	TBA	
12/1	TBA	
Week 15: 12/6	TBA	
12/8	TBA	

Note: This schedule is tentative and is up to revision. Such revisions (if any) will be announced online.

## Addendum: CSUN Policy on Plagiarism

. . . Cheating or plagiarism in connection with an academic program at a campus is listed in Section 41301, Title 5, California Code of Regulations, as an offense for which a student may be expelled, suspended, or given a less severe disciplinary sanction. . . . ([California State University Northridge Undergraduate/Graduate Catalog, 2008-2010](#) (PDF), Appendix E-2. Academic Dishonesty, p. 587)

**Plagiarism:** Intentionally or knowingly representing the words, ideas, or work of another as one's own in any academic exercise. Comments:

1. **Direct Quotation:** Every direct quotation must be identified by quotation marks, or by appropriate indentation or by other means of identification, and must be promptly cited in a citation. Proper citation style for any academic department is outlined by the *MLA Style Sheet* or K. L. Turabian's *A Manual for Writers of Term Papers, Theses and Dissertations*. These and similar publications are available in the Matador Bookstore and at the reference desk of the Oviatt Library. [See also: [Citing Your Sources: Style Guides](#)]
2. **Paraphrase:** Prompt acknowledgment is required when material from another source is paraphrased or summarized in whole or in part in your own words. To acknowledge a paraphrase properly, one might state: "to paraphrase Locke's comment . . ." and conclude with a citation identifying the exact reference. A citation acknowledging only a directly quoted statement does not suffice to notify the reader of any preceding or succeeding paraphrased material.
3. **Borrowed Facts or Information:** Information obtained in one's reading or research which is not common knowledge among students in the course must be acknowledged. Examples of common knowledge might include the names of leaders of prominent nations, basic scientific laws, etc. Materials which contribute only to one's general understanding of the subject may be acknowledged in the bibliography and need not be immediately cited. One citation is usually sufficient to acknowledge indebtedness when a number of connected sentences in the paper draw their special information from one source. When direct quotations are used, however, quotation marks must be inserted and prompt acknowledgment is required.

([California State University Northridge Undergraduate/Graduate Catalog, 2010-2012](#), Appendix E-2. Academic Dishonesty)

More information on how to avoid plagiarism can be found at CSUN library site:  
<http://library.csun.edu/Guides/ResearchStrategies/AvoidingPlagiarism>