

<b>CAPILANO UNIVERSITY COURSE OUTLINES</b>		
<b>TERM:</b> Fall 2015	<b>COURSE NO:</b> PHIL 320	
<b>INSTRUCTOR:</b> xx	<b>COURSE NAME:</b> Philosophy of Science	
<b>OFFICE:</b> <b>LOCAL:</b> <b>E-MAIL:</b>	<b>SECTION NO(S):</b>	<b>CREDITS:</b> 3
<b>OFFICE HOURS:</b>		

**COURSE FORMAT:**

Three hours of class time, plus an additional hour delivered through on-line or other activities for a 15 week semester, which includes two weeks for final exams.

**COURSE PREREQUISITES:**

45 credits of 100-level or higher coursework including 6 credits of 100- or 200-level PHIL.

**COURSE DESCRIPTION**

We human beings have developed a considerable level of scientific understanding of ourselves and the world we occupy. For most of us, this understanding shapes our lives; there is little we do or encounter that is not modified, somehow, by science and its subsequent application. This course has the principle aim of addressing how we came to have this understanding, what it amounts to, what impact it has on our understanding of ourselves and our place in the surrounding universe, and what judgements might follow from this understanding. A further aim comes from noting that there is often a substantial disconnect between the scientific understanding of the world and the ordinary or common understanding. Many things might account for this disconnect, but an important factor appears to be inadequate understanding of the basic aspects of science and its methods. The philosophy of science exposes students to these general aspects of science without requiring in-depth understanding *in* the sciences.

**Core Topics**

- **What is Science?**
  - Basic components of Science
  - Hypotheses, Theories, and Evidence
  - Explanation and Prediction
  - Reduction and Emergence
- **Scientific Reasoning and Progress**
  - The Problem of Induction
  - Induction and Falsification
  - Science and Pseudoscience
  - Scientific Paradigms and Traditions
- **Science and Us**

- From Science to Technology
- The Relationship between Science and Religion
- The Ethical, Social, and Cultural Implications of Science and Technology

**COURSE LEARNING OUTCOMES:**

Upon completion of the course, students should have acquired an in-depth understanding of the core topics in the philosophical inquiry into the nature, scope and implications of science. Further outcomes are as follows:

- Acquired understanding of the concepts, arguments, and theories presented as the content of the course
- Demonstrated this understanding through essays and test answers in such a way that a person not familiar with the relevant material reading the essays or test answers would gain an adequate understanding of the key concepts, arguments, and theories
- Prepared themselves for further studies in Philosophy (and other related areas)
- Acquired, or further developed, a kind of intellectual maturity reflected in a sincere attitude of modesty towards their own beliefs and strength of justification for those beliefs
- Enhanced their general skills of critical thinking
- Enhanced their general ability to understand complex ideas and lines of reasoning
- Enhanced their general ability to explain/express, both verbally and in writing, complex ideas and lines of reasoning

**COURSE WEBSITE:**

On Cap Moodle

**REQUIRED TEXTS:**

David Boersema. *Philosophy of Science* (Text with Readings). Pacific University, Prentice Hall. 2009 ISBN 032143711X

or

Jeffrey C. Leon. *Science and Philosophy in the West*. University of Texas at Austin, Prentice Hall. 1999 ISBN 013647439X

Plus additional reading selected by the instructor

**COURSE CONTENT:**

<b>Week 1</b>	<b>Introduction to the Philosophy of Science</b> Reading: Boersema Ch. 1
<b>Week 2</b>	<b>Basic components of Science</b> Reading: Boersema Chs. 2 & 3
<b>Week 3</b>	<b>Theories and Models</b> Reading: Boersema Ch. 4
<b>Week 4</b>	<b>Explanation, Prediction, and Empirical Observation</b> Reading: Boersema Ch. 5 & 6
<b>Week 5</b>	<b>Reduction, Emergence, and the Unity of Science</b> Reading: Boersema Ch. 7 "Unity of Science as a Working Hypothesis", Paul Oppenheim and Hilary Putnam
<b>Week 6</b>	<b>Reduction and Emergence, and the Unity of Science (cont.)</b> Reading: Boersema Ch. 7 Excerpt from <i>System of Logic</i> , John Stuart Mill (Web)
<b>Week 7</b>	Review / Mid-term Test
<b>Week 8</b>	<b>The Problem of Induction / Induction vs. Falsification</b> Reading: Boersema Ch. 8 Excerpt from <i>Conjectures and Refutations</i> , Karl Popper (handout) Excerpt from <i>The Foundations of Scientific Inference</i> , Wesley Salmon (handout)
<b>Week 9</b>	<b>Science and Pseudoscience</b> Reading: "Why Astrology is a Pseudoscience", Paul R. Thagard (web)
<b>Week 10</b>	<b>Scientific Paradigms, Progress, and Traditions</b> Reading: Boersema Chs. 9 & 10 "Objectivity, Value Judgment, and Theory Choice", Thomas Kuhn (handout)
<b>Week 11</b>	<b>Science and Religion</b> Reading: Boersema Ch. 13 "Creation-Science is Not Science", Michael Ruse (Handout)
<b>Week 12</b>	<b>Ethical Implications of Science and Technology</b> Reading: Boersema Ch. 12
<b>Week 13</b>	<b>Social and Cultural Implications of Science and Technology</b> Reading: Boersema Chs. 11 & 14
<b>Weeks 14 &amp; 15</b>	<b>Final Exam Period</b>

**COURSE ASSIGNMENTS:**

The final grade for the course will be made up of the following: two research essays and two in-class tests.

**EVALUATION PROFILE:**

Essays	2 0% + 30% =	50%
Tests	2 x 25% =	<u>50%</u>
		100%

**GRADE PROFILE:**

A+ = 90 - 100%	B+ = 77 - 79%	C+ = 67 - 69%	D = 50 - 59%
A = 85 - 89	B = 73 - 76	C = 63 - 66	F = 0 - 49
A- = 80 - 84	B- = 70 - 72	C- = 60 - 62	

## **OPERATIONAL DETAILS:**

Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Cheating and Plagiarism, Academic Probation and other educational issues. These and other policies are available on the University website.

Attendance: Regular attendance is expected.

Late Assignments: Please notify the instructor in advance if for some reason beyond your control you will miss an assessment date/deadline. Documentation (e.g., doctor's note) usually will be required. Unless otherwise pre-arranged, late work will be subject to a late penalty of 5% per day. Unless otherwise arranged, no work will be accepted after the last day of regular classes.

Missed Exams: Make-up tests are given at the discretion of the instructor. They are generally given only in medical emergencies or severe personal crisis. Students should be prepared to provide proof of inability to write the test on the scheduled date (e.g. letter from doctor).

English Usage: It is the responsibility of students to proof-read all written work for any grammatical, spelling and stylistic errors. Marks will be deducted for incorrect grammar and spelling in written assignments.

Incomplete Grades: Given at the discretion of the instructor. Generally given only in medical emergencies or severe personal crises.

Electronic Devices: No personal electronic devices (cell phones, pagers, calculators, electronic dictionaries, etc...) may be used during an examination without prior approval from the instructor. During an exam, turn off all cell phones and pagers and remove them from the desk.

## Emergency Procedures

Students are expected to familiarise themselves with the emergency procedures posted on the wall of the classroom.