

## **PHIL 490/500 A03: Understanding “Levels” in Science**

**Instructor:** Eric Hochstein

**Time:** Tuesday/Wednesday/Friday 10:30 AM –11:20 AM

**Location:** CLE B315

**Office Hours:** (in Clearihue B330): Wednesday, 2:00-4:30 pm; and by appointment

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**Description:** The concept of “levels” can be found in almost all domains of science. The way we scientifically classify and categorize phenomena can change depending on what “level” we are focusing on. Yet, it is often unclear what exactly levels are, or what the relationship between them is. Do “levels” refer to a metaphysical hierarchy that exists in nature, or to different ways of *interpreting* or *describing* the world? Can the scientific theories of one level be reduced to the theories of another? Can the *objects* of one level reduce to the objects of another? This course will explore the nature of levels as it appears in scientific contexts, and the role they play in scientific reasoning.

**Structure:** The course comprises 3 seminars per week, the contents of which will be based on the assigned external sources. The course will proceed primarily through discussions and presentations.

**Evaluation:** The course will be graded as follows:

- 1 in-class presentation if you are taking the class at the undergraduate level, 2 in-class presentations if you are taking the class at the graduate level, worth 20% total (this will involve a very brief summary and explanation of a few key points of the reading for that day, and leading class discussion).
- 2 papers, one worth 30% the second 40%
- A brief (one page max) summary of each course reading, due in class the day that reading is being covered. All summaries together are worth 10%

**Important to Note:** It is expected that students will prepare for and attend class regularly. Students are encouraged to consult the instructor with any problems or concerns about the course early in the semester.

### **Tentative Schedule of Readings:**

Week 1 (Jan 3 & Jan 5): Introduction and Setting the Stage

No Readings

Week 2: (Jan 9, Jan 10 & Jan 12): Levels of Reality (Part 1)

Oppenheim & Putnam, “The Unity of Science as a Working Hypothesis”

Kim, “The Layered World: Metaphysical Considerations”

Week 3 (Jan 16, Jan 17 & Jan 19): Levels of Reality (Part 2)

Fodor, “Special Sciences”

Mitchell, “Emergence: logical, functional and dynamical”

Week 4 (Jan 23, Jan 24 & Jan 26): Levels of Analysis (Part 1)

Marr, "Understanding Complex Information-Processing Systems"  
Davidson, "Mental Events"

Week 5 (Jan 30, Jan 31 & Feb 2): Levels of Analysis (Part 2)

Dennett, "Intentional Systems Theory"  
Dennett, "Real Patterns"

Week 6 (Feb 6, Feb 7 & Feb 9): Levels and Grounding

**First Term Paper due Feb 9th**

Bliss & Trogon, "Metaphysical Grounding"  
Raven, "New work for a theory of ground"

Week 7 (Feb 13, Feb 14 & Feb 16): Reading Week

**No Classes**

Week 8 (Feb 20, Feb 21 & Feb 23): Levels of Scale

Wimsatt, "The Ontology of Complex Systems: Levels of Organization, Perspectives, and Causal Thickets"  
Churchland & Sejnowski, "Perspectives on cognitive neuroscience"

Week 9 (Feb 27, Feb 28 & Mar 2): Levels of a Mechanism

Craver, "Interlevel Experiments and Multilevel Mechanisms in the Neuroscience of Memory"  
Krickle, "Making Sense of Interlevel Causation in Mechanisms from a Metaphysical Perspective"

Week 10 (Mar 6, Mar 7 & Mar 9): Levels of Cognitive Complexity

Karin-D'Arcy, "The Modern Role of Morgan's Canon in Comparative Psychology"  
Shettleworth, "Clever animals and killjoy explanations in comparative psychology"

Week 11 (Mar 13, Mar 14 & Mar 16): Levels of Abstraction (Part 1)

Woods & Rosales, "Virtuous Distortions"  
Morrison, "Approximating the Real: The Role of Idealizations in Physical Theory"

Week 12 (Mar 20, Mar 21 & Mar 23): Levels of Abstraction (Part 2)

Floridi, "The Method of Levels of Abstraction"  
Peraketh et al. "Simulation Modeling at Multiple Levels of Abstraction"

Week 13 (Mar 27, Mar 28): Should we do Away with Levels?

**No Class Friday March 30th**

Heil, "Levels of Reality"  
Thalos, "Without Hierarchy: The Scale Freedom of the Universe"

Week 14 (Apr 3, Apr 4 & Apr 6): Is There a Unifying Account of "Levels"?

**Second Term Paper Due April 6th**

Craver, "Levels"  
Eliasmith, "Levels"

**Note on Avoidance of Academic Offenses:**

All students registered in the course are expected to know what constitutes an academic offence, to avoid committing academic offenses, and to take responsibility for their academic actions. When the commission of an offense is established, it will be acknowledged by disciplinary penalties. If you need help in learning how to avoid academic offenses such as plagiarism, cheating, and double submission, or if you need clarification of aspects of the discipline policy, ask your course instructor for guidance. You can find the university's Policy on Academic Integrity here:

<http://web.uvic.ca/calendar2017-09/undergrad/info/regulations/academic-integrity.html>

If you are seeking editing help, please note that the university has recently adopted a strict view about seeking the help of others for editing. They say (this can be found in the link above):

An editor is an individual or service, other than the instructor or supervisory committee, who manipulates, revises, corrects or alters a student's written or non-written work.

The use of an editor, whether paid or unpaid, is prohibited unless the instructor grants explicit written authorization. The instructor should specify the extent of editing that is being authorized. Review by fellow students and tutoring that do not include editing are normally permitted.

**Note for students with disabilities:**

The Centre for Accessible Learning (<http://www.uvic.ca/services/rcsd/>) is a fantastic resource that collaborates with all academic departments to help arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with them at the beginning of each academic term.