**Philosophy 9???: Philosophy of Space and Time**

Chris Smeenk  
StH 1145, W 11:30 - 2:30  
· csmeenk2@uwo.ca, ext. 85770  
· Office Hours: TBD

**Evaluation:** Participation, weekly short responses, presentation, and either (1) a research paper due at the end of the term, or (2) three shorter papers due roughly every 4 weeks. For option (1), a brief description of the paper topic and / or outline, along with a bibliography, is due Nov. 29, and I am happy to consult with students. For option (2), students will be responsible for choosing topics for 6-8 page papers based on the readings and seminar discussion. Students choosing either option will give a 30 minute presentation, on a topic of their choice (in consultation with me). Short responses: brief comments (about 300-500 words) on papers to be discussed in the seminar, due weekly at 5:00 p.m. on Tuesday before class (full credit for six responses).

I will aim to insure that the seminar is accessible to students who are not familiar with the relevant mathematics and physics, although I will presume basic undergraduate mathematics. If there is an interest in doing so, I would be willing to hold optional sessions devoted to more technically detailed discussions.

**Course Website & Readings:** Assigned readings, supplementary readings, updated schedules, and short responses will be posted on the website.

**Tentative Topics**

This is a tentative list of topics that will be revised in summer 2017. The first three items in the list below are core topics; choices from the rest of the list will depend on the interests of students enrolled in the course.

- **Introduction: Space, Time and Motion in Classical Mechanics**
  - Stein, “Newtonian Spacetime.”

- **Special Relativity and Minkowski Spacetime**
  - di Salle, *Understanding Space-Time*, Chapter 4 (4.1-4.3).

- **General Relativity and Relativistic Spacetimes (3-4 weeks)**
  - Einstein’s path to general relativity: Einstein, “The Foundation of the General Theory of Relativity,” in *The Principle of Relativity* (selections); selections from historical literature, e.g. Renn et al., *Einstein’s Zurich Notebook*
  - di Salle, *Understanding Space-Time*, Chapter 4 (4.4-4.7).

- **Hole Argument and Background Independence (2-3 weeks)**
  - Pooley, “Substantivalist and Relationalist Approaches to Spacetime”.
  - Belot, “Background Independence” (selections).

- **Reconsidering Relationalism**
  - Belot, *Geometric Possibility* (selections).

- **Cosmology, Time’s Arrow, and the “Past Hypothesis”**

- **Black Holes and Singularities**
  - Manchak, “Global Spacetime Structure.”

- **Other Possible Topics**
  - Relativistic cosmology
  - Observation and prediction in general relativity