

THE UNIVERSITY OF WESTERN ONTARIO
DEPARTMENT OF PHILOSOPHY
Undergraduate Course Outline 2015-16

Philosophy 2310G: Philosophy of Physics
(Previously Philosophy 228)

Winter Term 2016

MWF 2:30-3:30, TC 343

Instructor: Prof. DiSalle

Stevenson 4142, Office Hours: FW 11:30- 1:30 (and

by appointment)

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DESCRIPTION

Modern physics has had a dramatic impact on philosophical ideas about space, time, and matter. The picture of the world that arises from special relativity, general relativity, and quantum mechanics seems to violate both common-sense ideas and philosophical intuitions. Moreover, all three of these theories were influenced by philosophical ideas about the nature of physical knowledge itself. We will consider some of the philosophical questions that arise from modern physics, including: Are space, time, and motion objective, or merely relative to the observer? Are the laws of physics founded on fact, or on convention? Is the indeterminism of quantum physics a reflection of our ignorance of the true laws of physics, or a genuine feature of the world? Does the world have objective properties at all, independently of our ability to measure them? We will approach these questions by studying original works by physicists as well as contemporary philosophical interpretations.

No detailed knowledge of physics is presupposed, and the fundamental concepts will be introduced in an elementary and intuitive way.

TEXTS

Einstein, *Relativity: The Special and the General Theory* (available at the UWO bookstore)

Rae, *Quantum Physics: Illusion or Reality?* (available at the UWO bookstore)

Supplementary readings to be posted on OWL

REQUIREMENTS

2 short essays (each 25%)

1 final exam (40%)

Class participation (10%)

OBJECTIVES

1. To understand philosophical implications of modern theoretical physics

2. To understand the theoretical foundations of modern physics
3. To relate philosophical views of physics to historical examples
4. To understand the impact of philosophical ideas on the development of physics
5. To develop competence in critical analysis by careful reading and discussion
6. To develop skills of oral expression and argument through class discussion
7. To develop writing skills through written assignments

AUDIT

Students wishing to audit the course should consult with the instructor prior to or during the first week of classes.

The **Department of Philosophy Policies** which govern the conduct, standards, and expectations for student participation in Philosophy courses is available in the Undergraduate section of the Department of Philosophy website at <http://uwo.ca/philosophy/undergraduate/policies.html>. It is your responsibility to understand the policies set out by the Senate and the Department of Philosophy, and thus ignorance of these policies cannot be used as grounds of appeal.