

THE UNIVERSITY OF WESTERN ONTARIO
DEPARTMENT OF PHILOSOPHY
Undergraduate Course Outline 2017-18

Philosophy 2032F: Einstein for Everyone

Fall Term 2017 T 11:30-1:30, Th 11:30-12:30 , WL 258	Instructor: Prof. DiSalle Stevenson 4142 Office Hours: T 1:30- 2:30, Th 12:30-1:30 (and by appointment) 661-2111 x85763 rdisalle@uwo.ca
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DESCRIPTION

Einstein's theories of relativity-- Special Relativity (1905) and General Relativity 1916-- revolutionized our conceptions of space, time, motion, gravity, the origins of the universe, and even the nature of scientific thinking. They have often been seen as barely comprehensible, involving ideas such as non-Euclidean geometry, space-time curvature, and black holes. Einstein himself, however, thought that any intelligent person could understand the essence of his theories by following the physical and philosophical arguments that led him to them. This course presents the basic structure of special and general relativity theory, their conceptual motivations, and their physical and philosophical implications. We will also study their impact on modern physics, especially on modern cosmology, and Einstein's thoughts about the puzzling relations between relativity and quantum physics.

No physics or mathematics background is assumed, but the mathematical concepts of Einstein's theories will be introduced in an intuitive and self-contained way. By the end of the course, students should have an intelligent grasp of the nature of "Einstein's universe".

TEXTS

Einstein, *Relativity: The Special and the General Theory*
Geroch, *General Relativity from A to B*
Norton, *Einstein for Everyone* (online)
Supplementary articles will be posted on OWL.

REQUIREMENTS

1. Homework (20 %): 10 simple exercises over the term; no late assignments are accepted, but only 8 of the 10 assignments count toward the final grade.
2. Midterm exam (20 %): In-class midterm exam, consisting of short essay questions.
3. Essay (30 %): one 4-6 page paper due at the end of term; suggested topics and guidelines will be distributed. The late penalty is 3 % per work day and 5 % for the weekend, with a maximum penalty of 20 %.

3. Final Exam (30 %): cumulative essay exam.

OBJECTIVES

1. To understand the basic ideas of special and general relativity and their philosophical and scientific significance.
2. To understand connections between physics and philosophy in Einstein's thought
3. To develop skills of conceptual analysis and argumentation
4. To develop competence in critical analysis by careful reading and discussion
5. 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.