

Department of Philosophy, Brown University
PHIL1620: Philosophy of Quantum Mechanics
Spring 2010

Instructor: Douglas Kutach
Brown University
Department of Philosophy
Box 1918
Providence, RI 02912

Course Hours: 2:30 PM - 3:50 PM Tuesday and Thursday in Wilson Hall 304.

Office Hours: Tuesday and Thursday 12:10 PM to 1:10 PM in Gerard House 300. If you cannot come then, or if the wait is long, please call or talk to me about some other meeting time.

Telephone: (401) 863-3242

Textbooks: David Albert, *Quantum Mechanics and Experience*.
Tim Maudlin, *Quantum Non-locality and Relativity*.

Website: http://www.brown.edu/Departments/Philosophy/Douglas_Kutach/Phil1620.html

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Course Description

The goal of this course is to analyze a wide range of philosophical issues that are informed by quantum mechanics. The primary issue will be evaluating various interpretations for the theory. How to best understand what the quantum mechanical formalism tells us about the world is still very controversial.

There are no formal prerequisites for this course, but mathematics will be used in the course. I will presuppose that you understand differential calculus, vectors, matrices, and complex numbers. No prior knowledge of quantum mechanics will be assumed. Two of the homework assignments will involve mathematical problems, and you will be expected to be able to solve some simple problems, but the vast majority of the course will not require mathematical problem-solving ability.

Tasks and Evaluations

Your grade for the course will be determined by these factors:

1. There will be two homework assignments worth a total of 16% of your final grade. The goal of these assignments will be for you to demonstrate understanding of how simple quantum mechanics/relativity problems are solved.
2. There will be two homework assignments worth a total of 32% of your final grade. The goal of these assignments will be for you to write expositions of theoretical and philosophical issues that arise in quantum mechanics. You will be attempting to write articles of the kind a sophisticated science journalist would write, pitched at an educated adult audience.
3. There are two exams, a mid-term and a comprehensive final worth 22%, and 30% of your final grade, respectively. It will involve criticism of existing textbook and popular presentations of various aspects of quantum mechanics, as well as analysis about the range of philosophical interpretations of quantum mechanics and related phenomena like non-locality. I will provide study questions before the exam.