

432018 PHILOSOPHY OF PHYSICS (Spring 2002)

General Description

The primary aim of this module is to consider which of our philosophical convictions might have to be sacrificed as a result of advances in physics. In particular, we will be concerned with the philosophical implications of quantum mechanics and relativity theory, the two great ‘foundation stones’ of twentieth century physics. Obviously, we cannot discuss all of the relevant issues in one term since they are manifold and complex. But, we can feasibly come up with a ‘road map’ which will guide you towards those problems which are commonly acknowledged to be the most important in this area of philosophy. With this in mind, by the end of this module, we will have an idea of what the main areas of contention are, what is at stake and what sacrifices might have to be made.

Aim

To examine the philosophical and conceptual problems raised by twentieth century physics — in particular, by quantum mechanics and relativity theory.

Objectives

By the end of this module, students should have:

- gained some familiarity with rudimentary relativity theory and quantum mechanics.
- learnt that empirical research can help us when we address metaphysical questions.
- become aware of the interplay between metaphysics and physics.

In particular, students should acquire a critical understanding of the implications of quantum mechanics for the philosophical realism versus anti-realism debate and the impact of relativity theory on Newton and Leibniz’s debate about space and time.

Teaching Methods

The teaching for this module consists of two lectures and one seminar each week. Attendance at lectures and seminars is compulsory.

During the course of this term each student is expected to write two procedural essays (of around two thousand words). Details about submission dates and a list of essay titles will be forthcoming.

Workload

You should attempt to keep up with the material covered in the lectures by reading the items which are recommended as preliminary reading on the lecture programme. You are also advised to do some of the additional reading which will be mentioned in the lectures.

It is essential that you do the reading for the seminars, and information about this will normally be provided in the lectures in the week prior to the seminar.

You also need to do the reading for the procedural essays. The reading and writing which is necessary for such essays should take up a considerable part of a week.

Feedback

Student Course Evaluation Forms will be given out at some point during the term. But please feel free to informally discuss the module with me during the term.

Assessment

The course will be assessed by means of a three hour examination in the Summer Term.