

## *The Hebrew University of Jerusalem*

### *Syllabus*

## **INTRO. TO HISTORY AND PHILOSOPHY OF SCIENCE - 71251**

*Last update 16-10-2018*

*HU Credits:* 2

*Degree/Cycle:* 1st degree (Bachelor)

*Responsible Department:* Agricultural - Special Program

*Academic year:* 0

*Semester:* 2nd Semester

*Teaching Languages:* Hebrew

*Campus:* Rehovot

*Course/Module Coordinator:* Nati Kupfer

*Coordinator Email:* [netanel.kupfer@mail.huji.ac.il](mailto:netanel.kupfer@mail.huji.ac.il)

*Coordinator Office Hours:* By appointment

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Teaching Staff:

Mr. Netanel Kupfer

Course/Module description:

*The course has two main pillars: historical and philosophical.*

*History:*

*We will try to elucidate - in very broad outlines - some major turning points in the historical development of scientific thought:*

- 1. The birth of modern science in ancient Greece*
- 2. The nature of Aristotelian science, which prevailed from 300BC until the 15th century AD.*
- 3. The birth of modern science and its characteristics.*

*Philosophically:*

*We will track basic concepts and philosophical questions concerning the nature of scientific thought. We will tackle these issues by discussing writings of different philosophers throughout history.*

Course/Module aims:

*Recognize the major stations in the history of scientific thought, with an emphasis on the difference between the old science, Aristotelian, and the new science of the 17th century onwards*

- To recognize a number of problems and basic concepts in philosophy of science*
- Recognize the basic concepts in philosophy*

Learning outcomes - On successful completion of this module, students should be able to:

*Recognize the major stations in the history of scientific thought, with an emphasis on the difference between the old science, Aristotelian, and the new science of the 17th century onwards*

- To recognize a number of problems and basic concepts in philosophy of science*
- Recognize the basic concepts in philosophy*

Attendance requirements(%):

75

*Teaching arrangement and method of instruction: Lectures, assignments*

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### Course/Module Content:

- Lesson 1: Introduction.
- Lesson 2: "Myth to Logos" - the birth of science in Greece: the myth to the pre-Socratic philosophers.
- Lesson 3: Pre-Socratic philosophers: the search for unity and multiplicity.
- Lesson 4: Platonic scientific concept to Aristotle: episteme and doxa; World of Ideas"; Math and saved phenomena"; Structure of the universe based on dialogue Timaeus and astronomy Anaximander. Aristotelian cosmos.
- Lesson 5: Science Aristotelian - criticism of Plato; "Four reasons"; Category theory; Aristotelian cosmos and Aristotelian logic.
- Lesson 6: basic concepts of logic: what is the logic? The general and informal, the basic laws of logic, "deduction and induction," "inference", "sufficient and necessary condition", and modus ponens and modus tollens" (and something about the difference between the current logic Aristotelian logic)
- Lesson 7: The New Science: Why did he come so late? Copernican revolution; Heliocentrism of nature: Galileo, Descartes, Leibniz and Newton; Comparing old New Science of Science.
- Lesson 8: Rationalism in front of empiricism, skepticism and criticism: Rene Descartes and Francis Bacon. Immanuel Kant's critical and his scientific conception.
- Lesson 9: logical positivism and philosopher of science Karl Hempel: Theories verifiable or just to confirm ?; Regardless of age and context of justification; Scientific explanations, hypotheses and induction, according to the waterfall; "The fallacy of conclusion charge"
- Lesson 10: philosopher of science Karl Popper: the problem of demarcation and the difference between science and pseudo-science; Attack the scientific concept of inductive; Refutation concept and the concept of history as history of scientific hypotheses and refutations.
- Lesson 11: philosopher of science Thomas Kuhn: sociology of science; Concepts "paradigm" and 'Ordinary Science'.
- Lesson 12: The concept of reduction and the question of the difference between the different areas of science (especially the Life Sciences)
- Lesson 13: human sciences and natural sciences (especially the problem of body and soul)
- Lesson 14: problems in the philosophy of Biology

### Required Reading:

In Hebrew

### Additional Reading Material:

None

### Course/Module evaluation:

End of year written/oral examination 100 %

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Presentation 0 %  
Participation in Tutorials 0 %  
Project work 0 %  
Assignments 0 %  
Reports 0 %  
Research project 0 %  
Quizzes 0 %  
Other 0 %

Additional information:

- submitting at least two of the three assignments, and receiving a "pass" grade on two of the three assignments is necessary condition for taking the exam.
- The submission of the assignments is online via the moodle system in a designated text-box and under the limit of maximal amount of words.
- Assignments submitted as files, via e-mail or on paper, won't be accepted.
- The test is a multiple choice exam: it contains 25 questions: 19 questions on class learning material, 3 questions on one of the texts from the required reading list, and 3 questions on an unseen text.