

Philosophy and Methodology of Natural and Social Sciences

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Course description

Philosophy and methodology natural and social studies is a course for second year ICEF students. It bases on the “Intellectual history of Europe”. The course is taught in Russian, necessary terminology is given in English as well. Particular accent is made on philosophical judgements of the basic features and tendencies of modern science in their historical development.

Specificity of the course

The course is intended for development of profound and generalized understanding of modern science, its specificity and basic tendencies of development. It assumes acquaintance to intellectual history of Europe including history of philosophical and scientific ideas, and also to problems of modern scientific and technical progress, its influence on all the sides of social life, mainly — on economics and politics. The close interrelation of the course with all of the complex of social-scientific subjects is supposed. The course demands reference to literature on philosophy (including textbooks on history of philosophy). Selection of educational literature is carried out by teachers in view of specificity of educational groups, degree of their readiness and professional interests. The program gives only common indications and reference points of this work.

Teaching objectives

Students should receive basic knowledge in the field of philosophy and methodology of science. Development of main principles of the methodological analysis of various forms and types and knowledge, achievement of understanding both similar features, and essential distinctions of concepts of natural, technical, social sciences and humanities, their interconnection with practical activities is supposed. Presence of this knowledge is a parameter of a level of philosophical both logic culture and the important condition of successful educational and independent research work.

Teaching methods

- Lectures
- Guided classes

- Consultations
- Works with the literature
- Use of Internet resources

Assessment

- Essay (6–8 p.)
- Presentations in class
- Exams

Grade determination

- Exams (50%)
- Essay (35%)
- Classwork (15%)

Main reading

Степин В. С. Философия науки. Общие проблемы. М., 2006 [С]

Additional reading

1. Никифоров А. Л. Философия науки: история и методология. М., 1998; 2-е изд. М., 2006.
2. Лебедев С. А., Ильин В. В. и др. Введение в историю и философию науки. М., 2005.
3. Ивин А. А. Современная философия науки. М., 2005.
4. Порус В. Н. Рациональность, наука, культура. М., 2002.
5. Кохановский В. П., Лешкевич Т. Г. Основы философии науки. Ростов-на-Дону, 2004.
6. Философия и методология науки. Под ред. В.И. Купцова. М., Аспект-пресс, 1996.
7. Современная философия науки: знание, рациональность, ценности в трудах мыслителей Запада. Хрестоматия. М., Логос, 1996.

Course outline

1. Science as a special form of cognitive activity

Genesis of scientific knowledge. From formation of ideal objects and operations with them as schemes of practical actions - to the theoretical knowledge and experiment.

Social and cultural conditions of occurrence of a science. How the nature became object of scientific knowledge? Valuable orientations of the European Renaissance and New Time — preconditions of theoretical natural sciences. A science as worldview. The relation of science to religion and philosophy.

Historical and cultural preconditions technical and socially-humanities. Interrelation of scientific knowledge of the nature, the person and a society. Technology - the artificial world created by human activity in a support on a science. Essential features of a technogenic civilization.

[C, c. 91–105, 119–153], [2, c. 33–64], [5, c. 36–50]

2. Science as a social institute

Collective character of scientific knowledge. Principles of the rational communications in a science. Disciplinary character of modern science. Forms of the organization of scientific researches. Academies and universities.

Science as a trade. Social characteristics of professional scientific activity. Science and education. The problem of a choice of strategy of scientific development. Science and economy. Science and culture.

Problem of the social responsibility of a science: legal, political and ethical aspects. Ideal model scientific ethos (R. Merton) in its comparison to the validity. A principle of "freedom of researches» in a social context.

Scientific and technical progress, its social, political and moral problems. Scientific and technical potential as a parameter of a place of the country in the world community. Contradictions STP and ways of their sanction.

[2, c. 303–366], [5, c. 541–576]

3. Structure of scientific knowledge

Empirical and theoretical levels of scientific research, their mutual conditionality.

Supervision and experiment in a science: the basic characteristics. Concept of the scientific fact. Empirical generalizations and laws.

The theory as model. Application of theoretical model for the description and explanations of the empirical facts. Regular character of natural-science theories.

Structure of scientific theories. What is "the law of nature", what its place in the natural-science theory? Mathematics and logic in the scientific theory.

Problem of the validity of scientific theories: the basic concepts.

Language of a science, its structure and the basic characteristics.

[5, c. 168–206], [2, c. 144–196]

4. The bases of scientific activity

1. Ideals and norms of research. What is “a scientific explanation”? Types of scientific explanations. The scheme of a scientific explanation (C. Hempel) and its limitations.

Problem of proof. The validity of scientific knowledge. Fundamental and applied scientific theories.

Historical variability of ideals and norms of scientific research.

2. The scientific picture of the world. “Fundamental objects” and laws of their interaction — main “plot” of this picture. The scientific picture of the world as the program of scientific researches.

3. Philosophical bases of a science. Interdependence of philosophical and scientific concepts. Dialogue of philosophy and a science as a condition of their development.

[5, c. 216–240], [C, c. 191–206].

5. The problem of scientific rationality

What is “scientific rationality”? The problem of criteria of scientific rationality. Historical types of scientific rationality.

Borders of scientific rationality. A problem of “demarcation” between a science and not-science (metaphysics, ideology and so on). Neo-positivistic program of an empirical substantiation of scientific knowledge, the reason of its impracticability. “Critical rationalism” (K. Popper, I. Lakatos). The concept of “scientific revolutions” (T. Kuhn): relativistic interpretation of scientific rationality.

Global scientific revolutions: a classical, nonclassical and post-nonclassical science.

[5, c. 380–404], [1, c. 14–101], [4, c. 13–30, 54–68, 91–106], [C, c. 267–330]

6. Social sciences and humanities: the basic methodological characteristics

Sciences about the nature and sciences about culture: similarities and distinctions. Methodological features of sciences about a society and the person. A problem of understanding in social knowledge (M. Weber, W. Dilthey). Objective character of values and their role in understanding of the cultural phenomena (E. Cassirer).

Problem of an explanation in social sciences. Whether data of socially-scientific explanations to natural-science are probable? A problem of dialogue between natural sciences and sciences about the person.

Synergetic as a heuristic source of social and humanitarian research.

[5, c. 475–540], [1, c. 172–190]

Distribution of hours

#	Topic	Total hours	Contact hours		Self study
			Lectures	Seminars	
1.	Science as a special form of cognitive activity	24	4	4	16
2.	Science as a social institute	24	4	4	16
3.	Structure of scientific knowledge	28	6	6	16
4.	Bases of scientific activity	28	6	6	16
5.	Problem of scientific rationality	28	6	6	16
6.	Basic methodological characteristics of social sciences and humanities	30	6	6	18
Total:		162	32	32	98