MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

NATIONAL AVIATION UNIVERSITY

Faculty of Linguistics and Social Communications

Department of Philosophy

Quality Management System

EDUCATIONAL-METHODICAL COMPLEX

on

«Philosophical Problems of Scientific Cognition»

(title of the course)

For all Fields of Study, Specialties and Educational and Professional programs

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№	Component of the Complex	Name of the electronic file	Availability	
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MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

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Faculty of Linguistics and Social Communications
Department of Philosophy

LECTURES OUTLINE

on the course «Philosophical Problems of Scientific Cognition»
for all Fields of Study, Specialties and
Educational and Professional programs

Developed by:
Associate Professors M. Abysova, T. Shorina

Lectures outline was considered and approved
at the meeting of the Department of Philosophy
Minutes № 16 of «28» 12 2021
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Module 1. «Science as a Phenomenon of Civilization»

THEME 1.1.
INFORMATION SOCIETY AND KNOWLEDGE SOCIETY

The aim of the theme: to reveal the features of modern society as a society based on scientific knowledge ("information society"); to know the theories of the information society developed by Western philosophers, sociologists and cultural scientists; to find out what features science has in the context of informatization of society and what benefits scientific communication in the information era has; be able to identify existing and possible negative consequences of computerization of various social practices in the future.

Key concepts: *agrarian society, information society, informatization, industrial society, network, postindustrial society, science, wave theory.*

Plan

1. The idea of the post-industrial stage of social development in the concept of D. Bell.
2. "The third wave" as a stage of formation of information society in the cultural concept of E. Toffler.
3. Information Society Theory of F. Fukuyama.
4. The essence of the network structure society in the social theory of M. Castels.
5. The place of science in the information society.

1. The Idea of the Post-industrial Stage of Social Development in the Concept of D. Bell

Starting to study the first question of the theme, it should be understood that the theory of information society emerged in response to the requests primarily of the American way of life, in which the introduction of personal computers in all spheres of society has significantly changed the standards of work, higher education, consumption of goods and services, circulation of information, etc. The American sociologist Daniel Bell was the first among the representatives of the social sciences in the 1970s XX c. who found a significant impact of information on all social processes, in particular on the redistribution of employment spheres. He noted that more than half of them are employed not in the production of goods, but in the services. This allowed him to call the new period of social development “post-industrial”.

In highlighting this issue, it should be noted that D. Bell differentiates three stages of social development: agrarian society, industrial society, postindustrial or information society. In his opinion, in the information society, information and communication technologies are actively developing, and conditions are created for the effective use of knowledge in solving the most important tasks of governing society and democratization of social life. Understanding the very concept of "information society" is based on the three main approaches: technological, communicative and societal.

It should be noted that the industrialization and informatization of society has a number of negative consequences, among which the main was the emergence of the so-called global problems of modern civilization (socio-environmental, socio-economic, socio-political, human problems). These problems are caused by the fact that human technical and production activities in their scale has reached the dimensions of planetary processes.

There is a wide-ranging debate around the post-industrial society theory which has begun in the scientific world of the Western world regarding the impact of communication technologies on the further development of Western civilization. In this connection it is necessary to note that D. Bell himself stated that his theory is purely abstract and depicts the future in the most general terms. The researcher has not yet defined the place occupied by the information and communication technologies in it, but presented the thorough analysis of the basic tendencies of social transformations, showing that at the new stage of social development theoretical knowledge becomes the core of information.

2. "The third wave" as a stage of formation of information society in the cultural concept of E. Toffler

Studying the second issue of the topic, it should be kept in mind that D. Bell's ideas encouraged a number of other leading sociologists, culturologists and futurists to develop the information society theory. Thus, American culturologist and futurologist Alvin Toffler, in his work Third Wave, based on the analysis of extensive empirical material, made a prediction that, in his view, after the end of the era of industrialism a new technological revolution is expected to come that will lead to a "trans-industrial" civilization. Along with significant changes in technics, technology, political, religious and other spiritual spheres, family-marriage, interethnic relations, he predicted significant changes in the information sphere. Describing the future impact of computers on human life, E. Toffler noted that, in addition to applications in production processes and in business in general, they are already embedded, or soon to be incorporated, into anything and everything, from air-conditioning and automotive sewing installations machines and household scales.

E. Toffler drew attention to the indispensable destruction of large companies and the radical change in social values (including moral ones) in the transition from an industrial to a super-industrial society. He was concerned about this, since he believed that in the strict vertical of the hierarchy, information often loses its credibility until it reaches the executor. Significant flows of information from top to bottom and backwards in hierarchical corporations do not have time to be processed, leading to inadequate decisions. Therefore E. Toffler noted that effective decisions should be made at ever lower levels of the organization.

Students should understand that, although the author called the Third technological wave “informational”, it did not reveal its essential features, did not develop a truly scientific theory of the information society. His concept does not reveal the role of theoretical knowledge in the new stage of social development.

3. Information Society Theory of F. Fukuyama

Considering the theory of the American futurologist Francis Fukuyama, who also called modern Western civilization an "information society", it should be noted that he, like D. Bell, in analyzing the essence of this society, focuses on structural changes in the employment of workers when in the economy of production as a source of wealth is increasingly being replaced by the service sector. At the same time, he considers other important changes in society, determined by the change in the content of information, its quantity and quality: the role of information and intelligence is becoming more inclusive both in humans and in increasingly intelligent machines; mental work is increasingly replacing the physical; there is a globalization of production through the implementation of low-cost information technologies; freedom and equality are increasing; different levels of the hierarchy begin to break down - political, corporate, etc. However, F. Fukuyama believed that the information revolution was the birth of a capitalist society, since only market relations contribute to entrepreneurship, more adaptability to the challenges of the information age.

He did not idealize the modern capitalist society, noting that the development of information technology is also detrimental to large corporations like IBM. Although the era of such corporations with a hierarchical structure is not yet over, the researcher believed that a revolution in the information sphere would lead to profound transformations. In this case, F. Fukuyama is disturbed by the crisis of confidence and generally accepted moral norms that accompanies the processes of decentralization of the economy. He emphasized that trust is not embodied in computer networks and fiber optic lines. Although it involves the exchange of information, it is not at all reduced to information. Moreover, his reflections on the future of human civilization, linked to the informatization of society, are pervaded by concerns about maintaining trust not only between individuals but their cultures.

4. The essence of the network structure society in the social theory of M. Castels

One of the latest theoretical developments related to the description of the essence of the information society is the theory of Manuel Castells, who published in 1996-1998 a work "Information Age", consisting of three volumes. It became a prominent phenomenon in the scientific life of the West, and its author was put by some observers on a par with K. Marx, M. Weber, and E. Durkheim.

It should be noted that the main idea of this work is M. Castells' recognition of emergence of a "new society", which is formed through the deployment of networks, the work of which is provided by information and communication technologies, and information flows are of exceptional importance. He also counted the beginning of such of a society, dating from the 70s of the twentieth century. He considered the new period in the development of Western society to be the continuation of capitalism, but based on the development and use of computer networks. He called this period of development of society "information capitalism", marked with two distinct signs: this kind of capitalism is worldwide and is largely built around a network of financial flows. The basis of such capitalism is precisely financial capital.

In his deep sociological analysis, M. Castells revealed the essential features of the new era, and arguably proved that in the information age, the historical tendency leads to the fact that dominant functions and processes are increasingly organized on the network principle. He defined the network structure, noting that it is a complex of connected nodes, where the specific content of each depends on the nature of the particular network structure in question. These include: securities markets and subsidiary centers that serve them when it comes to global financial flow networks; Councils of Ministers of different European countries when it comes to the political networking structure of the EU; coca and poppy fields, clandestine laboratories, financial institutions, etc. that are involved in money laundering when it comes to the production and distribution of drugs; TV channels, studios, journalistic crews, etc. when it comes to a global network of media that forms the basis for expressing cultural forms and public opinion in the information age. According to M. Castels, these are open structures that can expand indefinitely at the expense of new nodes. Such a social networking structure is highly dynamic and open to innovation without risking loss of balance. According to M. Castels the criterion for the demarcation of the industrial and information society ("information capitalism") is a technological approach.

5. The place of science in the information society

Science is gaining new dimensions in the information society, becoming more and more significant and an essential part of social reality. So, P. Draker believes that the most important difference between the modern phase of scientific and technological progress and the industrial revolution of the eighteenth-nineteenth centuries and technological breakthroughs of the first half of the twentieth century is that modern science is directly used to obtain new knowledge, whereas before it was used to improve tools of production and development of new forms of his organization.

The dramatic change in the role of science in modern society has led to serious transformations that science itself is undergoing: changing the organization, modifying ways and methods of obtaining scientific knowledge, changing the relationship between science and society, turning on processes that deform science and which lie in the socio-cultural and socio-economic plane. In modern science, there is a clear understanding of the limitations of a narrow-disciplinary approach and the need for transdisciplinary research that crosses the boundaries between scientific disciplines. Such studies not only use this or that knowledge, but also contribute to its penetration into related disciplines, as well as in the traditionally unrelated fields of this knowledge of human activity, are a favourable basis for the generation of unexpected ideas that break stereotypes and generate breakthrough scientific discoveries. Another problem is the change in the role of science in relation to public practice - the ever closer integration of science in the social context, the demand for its practical relevance. The vector of scientific development is increasingly diverting towards direct service of practice.

Science is becoming a real economic force that determines the dynamics of state development and its position on the world stage. The transition to a new economy, the main and most effective mechanism, which should be an innovative system, as a modern model of generation, dissemination and use of knowledge, their incarnation in new products, technologies, services in all spheres of society, requires the creation of new institutions to ensure the formation and the development of an innovative system, a favorable innovation climate. Traditional institutes of knowledge generation - institutes of the sector of science, education, production of knowledge-intensive products, are formed within the previous (industrial) stage of development and retain their purpose and functions in the post-industrial economy. The difference between the new institutions of knowledge generation is that they are formed at the post-industrial stage of development and determine its institutional configuration. New knowledge generation institutes include technoparks, scientific integrated systems, venture capital firms, creative corporations, global innovation corporations, innovation clusters, educational structures, including training and retraining centers, business incubators, science hubs, technology transfer centers. An example of effectively operating new knowledge-generating institutions are technopark structures (TPS), the dynamic development of which in different countries, suggests the formation of at least four models - American (US, Canada, UK), Japanese, Chinese ("new industrial countries") and mixed (Western European countries).

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METHOD GUIDE TO STUDENTS' SELF-STUDY

on the course «Philosophical Problems of Scientific Cognition»

for all Fields of Study, Specialties and
Educational and Professional programs

Developed by:

Associate Professors M. Abysova, T. Shorina

Method Guide to Students' Self-study
was considered and approved
at the meeting of the Department of Philosophy
Minutes № 16 of «28» 12 2021
Head of Department_____L. Drotianko

Sample on the

THEME 1.1. “INFORMATION SOCIETY AND KNOWLEDGE SOCIETY”

Check your progress:

1. What do you know about information society theories developed by Western philosophers, sociologists, and cultural scientists?
2. Name and describe the national concepts of the information society.
3. Can information society be called information technology if it is implemented? Explain your answer.
4. What features of science in the context of information society could you name?
5. What are the benefits of scientific communication in the information age?
6. Comment on F. Webster's findings on contemporary Western theories of the information society.
7. What are the current and potential negative effects of computerization? Justify your conclusions.

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METHOD GUIDE TO PRACTICALS

on the course «Philosophical Problems of Scientific Cognition»

for all Fields of Study, Specialties and
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Developed by:

Associate Professors M. Abysova, T. Shorina

Method Guide to Practicals

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Sample of the Practical Tasks on the THEME 1.1.

"INFORMATION SOCIETY AND KNOWLEDGE SOCIETY"

Task on the authentic text extract. Look through the text fragment. Perform the tasks after the text.

The Internet, as all technologies, does not produce effects by itself. Yet, it has specific effects in altering the capacity of the communication system to be organized around flows that are interactive, multimodal, asynchronous or synchronous, global or local, and from many to many, from people to people, from people to objects, and from objects to objects, increasingly relying on the semantic web. How these characteristics affect specific systems of social relationships has to be established by research, and this is what I tried to present in this text. What is clear is that without the Internet we would not have seen the large-scale development of networking as the fundamental mechanism of social structuring and social change in every domain of social life. The Internet, the World Wide Web, and a variety of networks increasingly based on wireless platforms constitute the technological infrastructure of the network society, as the electrical grid and the electrical engine were the support system for the form of social organization that we conceptualized as the industrial society. Thus, as a social construction, this technological system is open ended, as the network society is an open-ended form of social organization that conveys the best and the worse in humankind. Yet, the global network society is our society, and the understanding of its logic on the basis of the interaction between culture, organization, and technology in the formation and development of social and technological networks is a key field of research in the twenty-first century.

We can only make progress in our understanding through the cumulative effort of scholarly research. Only then we will be able to cut through the myths surrounding the key technology of our time. A digital communication technology that is already a second skin for young people, yet it continues to feed the fears and the fantasies of those who are still in charge of a society that they barely understand.

Castells M. *Change. The Impact of the Internet on Society: A Global Perspective*

Questions and tasks to the text:

1. What definition of Internet is given by M. Castells?
2. What the most important feature does the author give to the World Wide Web? Why?
3. How does the specificity of Internet influence on the society?
4. What is the ultimate goal of the social progress?

SAMPLE ON TYPICAL TEST ASSIGNMENTS
on the course «Philosophical Problems of Scientific Cognition»
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Faculty of Linguistics and Social Communications
Department of Philosophy

APPROVED
Head of the Department of Philosophy

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«28»__12___2021

TYPICAL TEST ASSIGNMENTS
on the course «Philosophical Problems of Scientific Cognition»

Find the correct answer.

1. A possible explanation for a set of observations or answer to a scientific question is:
a) theory;
b) experiment;
c) observation;
d) hypothesis.

2. 3. _____ is the process of obtaining information by using the senses. :
a) Analyze;
b) Inference;
c) Observation;
d) Hypothesis.

3. 8. After a hypothesis is formed, what would be the next step in the scientific method (inquiry)?
a) Ask a question;
b) Analyze data;
c) Form a conclusion;
d) Design and conduct experiment.

4. A hypothesis is:
a) an observation;
b) a possible answer to a question;
c) a problem to be solved;
d) an accurate measurement.

5. What happens when new evidence does NOT support a scientific theory?
a) The theory will be considered false and will not be used;
b) The theory will remain, and the evidence will be discarded;
c) The theory will remain, as science is not open to change;

d) The theory will either be modified, or rejected.

Developed by: Associate Professor T. Shorina

SAMPLE on MODULE TEST 1
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Department of Philosophy

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«28» 12 2021

MODULE TEST 1
on the course «Philosophical Problems of Scientific Cognition»

VARIANT - I

1 The concept of knowledge. Features of scientific knowledge.

2 Sensual and rational in scientific knowledge.

Developed by: Associate Professor M. Abysova

SAMPLE on MODULE TEST 2
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Faculty of Linguistics and Social Communications
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«28» 12 2021

MODULE TEST 2
on the course «Philosophical Problems of Scientific Cognition»

VARIANT - I

1. Historical types of rationality.
2. Traditions and innovations in the development of science.

Developed by: Associate Professor M. Abysova

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QUESTIONS TO GRADED TEST

on the course «Philosophical Problems of Scientific Cognition»

1. Science as a system of knowledge.
2. Science as a field of activity.
3. Science as a social institution.
4. The specifics of philosophical understanding of the phenomenon of science.
5. The place of science in the system of culture.
6. Western tradition in the methodology of science.
7. Domestic tradition in the methodology of scientific knowledge.
8. New European rationalism and empiricism in scientific knowledge (Fr. Bacon and R. Descartes).
9. The concept of "knowledge" and "mastering" of the world, their relationship.
10. Sensual and rational forms of cognitive activity.
11. Features of scientific knowledge.
12. Subject and object of scientific knowledge.
13. Empirical level of scientific knowledge.
14. Theoretical level of scientific knowledge.
15. The problem of truth in philosophy and science. Truth and lie.
16. The concept and essence of the logical foundations of scientific research.
17. The concept of "scientific rationality" and its types.
18. Historical types of scientific rationality.
19. The problem of formation of scientific concepts and terms.
20. The phenomenon of "migration" of terms in the process of functioning of science.

21. Basic forms of scientific knowledge: general characteristics.
22. Scientific idea as a form of scientific knowledge.
23. Scientific problem as a form of scientific knowledge.
24. Scientific hypothesis as a form of scientific knowledge.
25. Scientific theory as a form of scientific knowledge.
26. Scientific construct as a form of scientific knowledge.
27. The concept of "method" and "methodology", their relationship.
28. Methodological principles of scientific knowledge and their levels.
29. The ratio of methodology and techniques in research.
30. Basic criteria for classification of scientific methods.
31. Methods of empirical cognition.
32. Methods of theoretical knowledge.
33. General scientific research methods.
34. The relationship of philosophical and scientific methods of cognition.
35. The role of intuition and creativity in scientific knowledge.
36. Ancient natural philosophy as a pattern of the relationship of philosophical and scientific knowledge.
37. Traditions and innovations in the development of science.
38. The role of philosophy in the formation of natural sciences (XVI-XVIII centuries)
39. The specifics of the formation of the humanities and social sciences.
40. Hermeneutics as a methodology of socio-humanitarian knowledge.
41. Basic principles of classification of sciences.
42. Modernism and postmodernism in the science of the XX-XXI centuries.
43. Natural sciences, social sciences, humanities and technical sciences: the specifics of the subject of research.
44. Criteria for classifying of sciences into empirical and theoretical.
45. Fundamental and applied sciences.
46. Historical periodization of science: classics - non-classics - post-non-classics.
47. Essential features of interdisciplinary sciences.
48. Problems of forming of a scientific community. Ethos of science.

Developed by: Professor L. Drotianko