

**National Research University – Higher School of Economics**  
Department of History  
**Syllabus of the course: “Technology, science and environment in history: interdisciplinary history”**  
Master’s program “Applied and Interdisciplinary History «Usable Pasts»”

**Government of the Russian Federation**  
**National Research University Higher School of Economics**

Department of History

Syllabus of the course:

Technology, science and environment in history: interdisciplinary history, 4 ECTS, 152 hours

Master’s program « Applied and Interdisciplinary History «Usable Pasts»»

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## Аннотация

Цель этого базового курса состоит в ознакомлении студентов с методами междисциплинарной истории на основе технологической и экологической истории. История технологий, экологическая история в настоящее время являются одними из наиболее динамично развивающихся полей истории и важны для понимания значимых современных дискуссий, касающихся развития современных экономических систем с использованием инновационных технологий, новые принципы разделения труда и неравенство, проблемы энергоснабжения, продовольственная безопасность, изменение климата и др. Экологическая история, с одной стороны, "по своей природе является междисциплинарной" (John McNeill). С другой стороны, экологическая история становится важной составной частью прикладной истории и public history. (Carruthers, Robin).

Изучение методологии и получить общее представление о развитии историографических направлений этих двух суб-полей в их тесной связи с историей науки является важным для студентов, которые готовятся к академической карьере или планируют делать прикладные исследования и вести практическую работу, изучая наследие, поскольку существенная часть наследия включает в себя промышленные / технологические и / или природные компоненты. Курс построен тематически и сфокусирован на рассмотрении того, как экологические и технологические аспекты переплетаются и взаимодействуют друг с другом и с наукой. В курсе рассматриваются в исторической перспективе такие ключевые понятия, как "природа", "окружающая среда", "ландшафт", "река", "океан", "город", "инфраструктура" и др.

The aim of this core course is two-fold: to introduce students to methodologies of interdisciplinary history on the basis of technological and environmental history and to show the advantages and contradictions in emerging of interdisciplinarity as one of the main tendencies in development of science.

Technological and environmental histories are now occupying a significant place among the leading and most rapidly developing subfields of history because of their relevance to a large number of hot contemporary debates, be it a new economy based on innovations, a new division of labor, problems of energy supply, food security or climate change among others.

The environmental history, on the one hand, is 'by its very nature an interdisciplinary pursuit – and should become still more so' (John McNeill). Environmental historians are well-placed to serve the interests of the historical profession but making a bridge between humanities and natural sciences. On the other hand environmental history is becoming the important component of applied (and public) history (Carruthers, Robin).

Learning methodology and gaining basic understanding of historiography of these two subfields in their close connection with the history of science is crucially important for students who prepared themselves either to academic career in interdisciplinary history or to doing applied research and practical work with heritage because the essential part of heritage has industrial / technological and / or natural components. Most of cultural heritage are a part of dynamically growing human-built world defined by technology, on the one hand, while on the other hand, are imbedded into natural landscapes or have natural components.

The course is thematically based and focused on how ecological and technological aspects intertwined and shaped with each other and with the science. The course examines in historical perspective such key concepts as "nature", "environment", "landscape", "river", "ocean", "city", "infrastructure" and etc.

- **Scope of Use**

This syllabus outlines the requirements for students' knowledge and skills and the content of the course. It is developed for the department of History, its faculty members, and students of the graduate program 'Applied and Interdisciplinary History «Usable Pasts»'. This syllabus meets the standards required by Standards of National Research University Higher School of Economics of Federal Masters' Degree Program History (46.04.01). Curriculum of the master's program 'Applied and Interdisciplinary History «Usable Pasts»' as of 2015.

- **Objectives of the course**

Today education in history reveals a need to look for an appropriate combination of applied and fundamental knowledge which enables graduates to choose between careers in applied areas and academic path. The MA program in applied and interdisciplinary history has the objective to realize a unique combination of fundamental and applied training to prepare graduates who will demonstrate interdisciplinary commitments and academic research skills as well as expertise and skills related to the key elements of applied history.

Students are expected to receive deep experience of working with academic literature, participation in academic discussions, and skills required for producing and reasoning their own point of view. These skills will simplify and conceptualize dissertational research, improve the quality of Master`s thesis, enable the concerned students to continue their academic activities on the PhD level, as well as help shape the setting of analytical tools necessary for professional work in applied history. The received knowledge and skills would be of high importance and value for those students aimed at entering academia as well as for those aiming into seeking a job in museums, media, consultancy and other fields where historical education might be needed.

The seminar has the following **objectives**:

- Introduce students to leading research works in the field of Environmental history, History of Technology and History of science and to develop their ability to evaluate research performed by others;
- Help students formulate their view on the thematic field in order to enable them to choose a topic of their research;
- Provide students with methodologies required for dissertational research;
- Enable students to gain research skills which include reviewing academic literature and interpretation of received results;

The course "Technology, science and environment in history: interdisciplinary history" is being held during the whole period of studies: 3-4 modules at the 1<sup>st</sup> year. It consists of lectures and seminars.

- **Learning outcome:**

The students are supposed to adopt the following competences:

System competencies

<b>Code (RUS)</b>	<b>Code (ENG)</b>	<b>Competence description</b>
<b>CK -1</b>	<b>SC-1</b>	Ability to reflect upon (evaluate and improve) scholarly methods and practices
<b>CK – 2</b>	<b>SC-2</b>	Ability to generate concepts and theoretical models, to test new methods and tools for professional activities
<b>CK - 3</b>	<b>SC-3</b>	Ability to master new research methods, and to transform his or her own professional profile
<b>CK – 4</b>	<b>SC-4</b>	Ability to develop and enhance one’s own intellectual and cultural levels and to build the trajectory of one’s professional development and career.
<b>CK-6</b>	<b>SC-6</b>	Ability to analyze, verify, and estimate the entirety of information in one's professional performance, ability to fill the gaps and synthesize required information when needed.
<b>CK- 7</b>	<b>SK - 7</b>	Ability to organize the multidimensional communication and manage it (including intercultural communication)
<b>CK – 8</b>	<b>SK - 8</b>	Ability to carry out research and other professional activities in international environment

Professional competencies

<b>Code (RUS)</b>	<b>Code (ENG)</b>	<b>Competence description</b>
<b>ПК - 1</b>	<b>PC - 1</b>	Ability to carry out research practices drawing on up-to-date research methodologies and knowledge in humanities, social sciences and other relevant areas of scholarship
<b>ПК - 2</b>	<b>PC - 2</b>	Ability to engage in interdisciplinary interaction and collaboration with scholars in relevant research areas in order to adequately address fundamental and applied research problems
<b>ПК-3</b>	<b>PC-3</b>	Ability to read scholarly texts and to epitomize scholarly literature in Russian and in foreign

<b>ПК-5</b>	<b>PC-5</b>	languages. Ability to present the results of the research in Russian and foreign languages, to analyze and generalize the results of the scholarly research based on the contemporary interdisciplinary approaches.
<b>ПК-6</b>	<b>PC-6</b>	Ability to search, handle and present information, work with the databases in humanities.
<b>ПК-7</b>	<b>PC-7</b>	Ability to formulate scholarly problems of current interest that can enrich historical scholarship through their study, ability to reach perspective research and applied goals.
<b>ПК - 11</b>	<b>PC - 11</b>	Ability to organize scientific research according to the principles of academic ethics.
<b>ПК - 12</b>	<b>PC - 12</b>	Ability to organize project activities in humanities and social sciences.
<b>ПК - 13</b>	<b>PC - 13</b>	Ability to lead research projects in humanities and social sciences.
<b>ПК - 15</b>	<b>PC - 15</b>	Ability to apply obtained knowledge in teaching humanities and social sciences in secondary and professional schools.
<b>ПК – 19</b>	<b>PC - 19</b>	Ability to create and edit scientific and popular texts in humanities and social sciences.
<b>ПК - 22</b>	<b>PC - 22</b>	Ability to define and translate the main goals in professional and social activities.

#### Personal and social competencies

#### Research tasks

<b>Code (RUS)</b>	<b>Code (ENG)</b>	<b>Competence description</b>
<b>НИД 1</b>	<b>NID 1</b>	Identification and structuring of a research problem in the sphere of professional activity, independent choice, justification of the object, matter, final aim, goals and methods of the research in relevant problem in the professional field and their implementation – independent organization of scholarly research in a relevant field, in the interdisciplinary sphere, preparation and implementation of the research projects related to the profile of the OOP of the master’s program.
<b>НИД - 2</b>	<b>NID 2</b>	Mastering, improvement and developing of theoretical and methodological approaches, research methods, methods of analysis in the field of study of the objects of professional activity.

НИД 4	NID 4	Analysis and generalization of the scholarly research according to the requirements of the up-to-date historical scholarship.
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• **Pre-requisites, course type, role of the discipline within the structure of Master program**

This is a core course taught in the first year of the master’s program “Applied and Interdisciplinary History «Usable Pasts»”.

The following knowledge and competences are needed to study the discipline:

- Basic knowledge of history of the world, especially the 19 – 20 cc.
- Upper-intermediate or advanced reading and speaking skills in English.

**Structure and content**

The course is seminar based and includes the following main sections:

Themes	Lecture (Hours)	Seminar (Hours)	Self Study (Hours)
Topic 1. Ways of knowing as an overall approach in understanding development of science, technology and medicine (John Pickstone)	2	6	10
Topic 2. Building of scientific disciplines and emergence of interdisciplinarity. Searching for common language. Advantages and obstacles of interdisciplinarity. Experts networks in the making.	4	6	10
Topic 3. History and contemporary thematic fields and approaches in technological and environmental history.	4	6	10
Topic 4. Technological and industrial development. History of infrastructures and human-built world.	4	6	10
Topic 5. Nature, environment, and society: interactions and entanglements in history. History of resources and their use, history of the commons. Rivers, cities, agro- and technoscapes and other objects of studies by	4	6	10

'envirotech' approach.			
Topic 6. Industrial, technological and natural heritages: practices of studies and policy.	2	6	8
Total	20	36	58

### **Obligatory literature:**

1. Carse Ashley. Nature as Infrastructure: Making and Managing the Panama Canal Watershed, *Social Studies of Science*, 42 (2012): 539-563.
2. Emmett R. and Zelko F. Minding the Gap: Working Across Disciplines in Environmental Studies, *RCC Perspectives*, no. 2, 2014. Available at [http://www.environmentandsociety.org/sites/default/files/2014\\_i2\\_web.pdf](http://www.environmentandsociety.org/sites/default/files/2014_i2_web.pdf)
3. Hughes T. *Networks of Power: Electrification in Western Society, 1880-1930*. Baltimor. Available at [https://monoskop.org/images/2/29/Hughes\\_Thomas\\_P\\_Networks\\_of\\_Power\\_Electrification\\_in\\_Western\\_Society\\_1880-1930.pdf](https://monoskop.org/images/2/29/Hughes_Thomas_P_Networks_of_Power_Electrification_in_Western_Society_1880-1930.pdf)
4. Kalmbach K. Radiation and Borders: Chernobyl as National and Transnational Site of Memory // *Global Environment* 11 (2013): 130–159. Available at <http://www.whp-journals.co.uk/GE/Articles/Kalmbach.pdf>
5. Nye D. *Technology Matters: Questions to Live With* Cambridge. Available at <https://polifilosofie.files.wordpress.com/2012/12/technology-matters-questions-to-live-with-david-e-nye.pdf>
6. Scott J. C. Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed. Available at <https://libcom.org/files/Seeing%20Like%20a%20State%20-%20James%20C.%20Scott.pdf>
7. Schipper F. & Schot J. Infrastructural Europeanism, or the project of building Europe on infrastructures: an introduction // *History of Technology: An International Journal*. 2011. 27:3. P. 245-264.

### **Recommended literature:**

8. Bocking S. A Disciplined Geography: Aviation, Science, and the Cold War in Northern Canada, 1945-1960, *Technology and Culture*. 2009. Vol. 50. N 2. P. 265-290.
9. Brain S. The Great Stalin Plan for the Transformation of Nature, *Environmental History*, vol. 15, 4 (2010): 670-700.
10. Edgerton D. From Innovation to Use: Ten Eclectic Theses on the Historiography of Technology, *History and Technology* 16:2 (1999), 111-136.
11. Hughes P. Th. *The Evolution of Large Technological Systems. The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. MIT Press: Cambridge, MA, 1987, pp. 51-82.
12. Inkster I. Potentially global: “useful and reliable knowledge” and material progress in Europe, 1474-1914, *International history review* 28 (2006) 237-286

13. Jas N. Public Health and Pesticide Regulation in France Before and After Silent Spring // History and Technology: An International Journal. Special Issue: Risk and 'Risk Society' in Historical perspective. 2007. Vol. 23. Issue 4. P. 369-388.
14. Kaiser A. System Building from Below. Institutional Change in Dutch Water Control Systems // Technology and Culture. 2002. Vol. 43. N 3. P. 521-548
15. Kojevnikov A. The Great War, the Russian Civil War, and the Invention of Big Science // Science in Context (2002) 15: 239-275.
16. McNiell J. Something New Under the Sun: An Environmental History of the Twentieth-Century World. London, 2000.
17. Shapin S. "Pump and Circumstance: Robert Boyle's Literary Technology." Social Studies of Science 14, no. 4 (1984): 481-520.
18. Siddiqi A. Sputnik 50 years later: New evidence of its origin, Acta Astronautica 63 (2008): 529 – 539.
19. Siddiqi A. Competing Technologies, National(ist) Narratives, and Universal Claims: Towards a Global History of Space Exploration, Technology and Culture 51, 2 (2010): 425 – 443.
20. Somsen G. J. A History of Universalism: Conceptions of the Internationality of Science from the Enlightenment to the Cold War, Minerva, 46 (2008), pp. 361-79
21. Cronon, W. The Trouble with Wilderness: Or, Getting Back to the Wrong Nature, Environmental History, Vol. 1, No. 1 (Jan., 1996)
22. Turchetti S., Naylor S., Dean K., Siegert M. On thick ice: scientific internationalism and Antarctic affairs, 1957–1980, History and Technology, 24(4) (2008): 351-376.
23. Uekotter F. Turning Points in Environmental History. Munich, 2010.
24. Weiner D. Demythologizing environmentalism, Journal of the History of Biology, 25, 3 (1992): 385 - 411.

**Prerequisites** no special prerequisites except upper intermediate level of English language is required

### **Assessment**

Coursework 750-word encyclopedia article and 2000-word essay (review) (25%):

Oral examination in a form of essays presentation (35%)

Class participation (40%)