

OPEN SOCIETY INSTITUTE
HIGHER EDUCATION SUPPORT PROGRAM
REGIONAL SEMINAR FOR EXCELLENCE IN TEACHING

T E X N H .
THEORETICAL FOUNDATIONS OF ARTS,
SCIENCES AND TECHNOLOGY
IN THE GRECO-ROMAN WORLD

ORGANIZED BY
THE CENTRE FOR ANCIENT PHILOSOPHY AND THE CLASSICAL TRADITION
NOVOSIBIRSK STATE UNIVERSITY
WWW.NSU.RU/CLASSICS/

SUMMER SESSION
AUGUST 1–9, 2010

OUTLINE OF THE COURSES AND RECOMMENDED READINGS

INTRODUCTORY WORKS (VERY SELECTIVE) AND GENERAL RESOURCES

- Cohen M. R. and I.E. Drabkin, *A Source Book in Greek Science*. Cambridge, MA, 1958.
Dicks D. R. *Early Greek Astronomy*. London, 1970.
French, Roger. *Ancient Natural History. Histories of nature*. New York, 1994;
Gaukroger S. (ed.) *The Uses of Antiquity. The Scientific Revolution and the Classical Tradition*.
Dordrecht, 1991.
Georgia L. Irby-Massie, Paul T. Keyser, *Greek Science of the Hellenistic Era: A Sourcebook*. London
and New York: Routledge, 2002.
Grant E. *A Source Book in Medieval Science*. Cambridge, MA, 1974;
Hannam, James, *God's Philosophers. How the Medieval World Laid the Foundations of Modern
Science*. London: Icon Books Ltd: 2009.
Lloyd G.E. *Methods and Problems in Greek Science*. Cambridge, 1991 (Idem, *Greek Science after
Aristotle*, 1973).
Longrigg J. *Greek Medicine. A Source Book*. London, 1998.
Naddaf, Gerard, *The Greek Concept of Nature*. SUNY series in Ancient Greek Philosophy. Albany,
NY: State University of New York Press, 2005.
Nutton, Vivian, *Ancient Medicine*. London and New York: Routledge, 2004.
Philip J. van der Eijk, *Medicine and Philosophy in Classical Antiquity. Doctors and Philosophers on
Nature, Soul, Health and Disease*. Cambridge: Cambridge University Press, 2005.
Rihll T. E., *Greek Science*. Oxford, 1999.
Sharples, R.W. (ed.), *Philosophy and the Sciences in Antiquity*. Ashgate Keeling Series in Ancient
Philosophy. Burlington, VT: Ashgate, 2005.
Rozhanski I. D. *The Development of the Natural Sciences in Antiquity. Part 1: Early Greek Science
about "nature"; Part 2: The History of the Natural Sciences in Hellenistic and Roman Period*

(Moscow, 1979–1988) – Рожанский И. Д. 1) Развитие естествознания в эпоху античности. Ранняя греческая наука о «природе» (Москва, 1979); 2) История естествознания в эпоху эллинизма и Римской империи (Москва, 1988)

A list of the [Resources for Classical Studies](http://www.nsu.ru/classics/favorite.htm) and a selection of materials for those who teach and study Greek and Latin are available at <http://www.nsu.ru/classics/favorite.htm>

Ancient philosophy: <http://www.nsu.ru/classics/plato/index.htm>

Journal ΣΧΟΛΗ: <http://www.nsu.ru/classics/schole/index.htm>

A syllabi and a selection of materials are available at <http://www.nsu.ru/classics/reset/favorite.htm>

(A) THE ORIGIN OF THE HISTORY OF SCIENCE IN CLASSICAL ANTIQUITY

DIRECTED BY PROF. LEONID ZHMUD (ST. PETERSBURG)

The course will cover a series of topics essential for understanding of the process of emerging and developing of the exact sciences and technologies in the Greco-Roman world. The first year's module will discuss the methodology of classical studies, give a general picture of the history of sciences, and focus on the following subjects:

- 1) Philosophy and exact sciences in the classical period: differentiation, interaction, integration?
- 2) Natural sciences and natural philosophy in the Pythagorean School.
- 3) History and philosophy of science in the Academy and Lyceum.
- 4) Exact sciences and technology in the Greco-Roman world.

Basic:

Zhmud L. *The Origin of the History of Science in Classical Antiquity*. Berlin 2006. The first edition in Russian: Жмудь Л. Я. *Зарождение истории науки в античности*. С.-Петербург, 2002.

Sharples R., ed. *Philosophy and the Sciences in Antiquity*. Aldershot 2005.

Sources:

Cohen M.R. and I.E. Drabkin, ed. *A Source Book in Greek Science*. Cambridge, MA, 1958.

Irby-Massie Georgia L., Paul T. Keyser, ed. *Greek Science of the Hellenistic Era: A Sourcebook*. London and New York: Routledge, 2002.

Kirk, G. S., Raven, J. E., Schofield, M. *The Presocratic Philosophers*, 2nd ed., Cambridge 1983.

Лебедев А. В., пер. Фрагменты ранних греческих философов. Москва 1989.

Humphrey J.W. et al. *Greek and Roman Technology: a sourcebook: Annotated translations of Greek and Roman sources*. London 1998.

Additional:

Bowen A. C. et al. ed. *Science and Philosophy in Classical Greece*. New York, 1991.

Cuomo S. *Ancient Mathematics (Sciences of Antiquity)*. New York 2001.

Lloyd G.E.R. *Methods and Problems in Greek Science*, Cambridge 1991.

Neugebauer O. *The Exact Sciences in Antiquity*, 2nd ed., New York 1962 (and a Russian translation of this book).

Tuplin C.J., Rihll T.E. eds. *Science and Mathematics in Ancient Greek Culture*, Oxford 2002.

Жмудь Л.Я., *Наука, философия и религия в раннем пифагореизме*, СПб, 1994 (2nd ed. 2010).

A new edition now prepared: Zhmud L. *Pythagoras and Early Pythagoreans*. Oxford: Oxford University Press: *(forthcoming)*

(B) “NEW TEXTS AND NEW TECHNOLOGIES IN TEACHING CLASSICS: TASKS AND PROBLEMS”

DIRECTED BY EUGENE AFONASIN (NOVOSIBIRSK)

Nowadays we experience a major change in teaching paradigm, and this change includes new approaches in studying and teaching classics, heavily dependent on new technologies. We will discuss these possibilities, try to work with such documents as the Archimedes palimpsest, the Derveni papyrus, etc. and master the relevant programs and internet resources.

Basic

Eugene Afonasin, [New Technologies for Classicists](#) (Novosibirsk, 2008, in Russian)

Links

The *Thesaurus Linguae Graecae* (TLG), the digital library, containing most literary texts written in Greek from Homer to the fall of Byzantium in AD 1453. We shall try working with it both on-line (<http://www.tlg.uci.edu/>) and on CD's.

There are a number of programs for viewing and searching TLG and other data banks, such as PHI#5 and PHI#7. Cf. a detailed description of them at <http://www.tlg.uci.edu/Software.html>

and also my review of the *SNS-Greek and Latin* at <http://ccat.sas.upenn.edu/bmcr/2005/2005-04-41.html>

Among the best programs is, no doubt, *The Antiquarium*, created by Vyacheslav Tsypline, Sergey Lebedev (Moscow): <http://antiquarium.erebus.org/>; this software uses the Unicode fonts (only few programs for TLG feature this) and is connected to electronic version of the *Liddell and Scott Greek-English Dictionary* (provided by Logos Bible Software <http://www.logos.com/products/details/1772>), and the *Alpha* (a Greek-Russian Dictionary of Dvoretzky, digitized by Sergej Gurin: <http://gurin.tomsknet.ru/>)

For new technologies in studying manuscripts and papyri cf.

multi-spectral imaging http://www.et.byu.edu/news_imaging.htm

For Archimedes Palimpsest cf. Netz, Reviel, and William Noel, *The Archimedes Codex: Revealing the Secrets of the World's Greatest Palimpsest* (Weidenfeld and Nicolson / Orion Publishing Group, London, 2007; the internet-resource: <http://www.archimedespalimpsest.org> and a review with relevant literature by Eugene Afonasin in *Bryn Mawr Classical Review* (<http://ccat.sas.upenn.edu/bmcr>).

For a new project of digital study of the *Derveni Papyrus*

cf. Dubuis E. (2006) “Le papyrus de Derveni renaît de des cendres”,

<http://www.arsitra.org/yacs/articles/view.php/185>

Gabor Betegh, *The Derveni Papyrus. Cosmology, Theology and Interpretation*. Cambridge: Cambridge University Press, 2004.

A Russian Translation of the Derveni Papyrus: <http://www.nsu.ru/classics/schole/2/2-2-pderveni.pdf>

(C) THEORETICAL FOUNDATIONS OF ANCIENT MATHEMATICS

DIRECTED BY ANDREY RODIN (MOSCOW / PARIS) AND ANDREY SHENTNIKOV (NOVOSIBIRSK)

In this introductory course of ancient mathematics we will focus on two systematic classical works: Andrey Rodin will discuss the *Elements* by Euclid, especially the sources of his great work, traced back to the Old Academy, and Andrey Shetnikov will present a newly translated and commented astronomic sections of *The Mathematics useful for understanding Plato* by Theon of Smyrna and the astronomic work by Cleomedes (*Meteora* and *Kyklike theoria*).

Sources:

Euclid, *The Elements*

A new ET by Richard Fitzpatrick: <http://farside.ph.utexas.edu/euclid.html>

Heath's ET and the Greek text in the Perseus:

Greek: <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3atext%3a1999.01.0085>

English: <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3atext%3a1999.01.0086>

Russian: Евклид, *Начала*. Пер. и комм. Мордухай-Болотовского (Москва, 1948–1950)

Proclus, *Commentary on the First Book of Euclid's Elements*

The Greek text: <http://www.archive.org/details/proclidiadochiin00procuoft>

A partial Russian translation by A. Shetnikov (Definitions and Axioms):

<http://www.nsu.ru/classics/schole/2/2-2-proclus.pdf>

Cf. also a Russian translation of Proclus' *Introduction to the Commentary to the First Book of Euclid's Elements* by Yu. Shichalin (Moscow, 1997)

Theon of Smyrna. *Mathematics useful for understanding Plato*:

<http://www.nsu.ru/classics/schole/3/3-2-theon.pdf>

Cleomedes (*Meteora*, or *Kyklike theoria*):

Bowen A. C., Todd R. B. (2002) *Cleomedes' lectures on astronomy. A translation of the Heavens with an introduction and commentary* (Berkeley)

A Russian translated by A. Shetnikov (unpublished)

Nicomachus of Gerasa.

Introduction to Arithmetic: <http://www.nsu.ru/classics/schole/3/3-1-nicomach-2.pdf>

Manual of Harmonics:

<http://www.nsu.ru/classics/schole/3/3-1-nicomach-3.pdf>

<http://www.nsu.ru/classics/schole/2/2-1-nikomach.pdf>

TEOLOGOUMENA ARITHMETICAE: <http://www.nsu.ru/classics/schole/3/3-1-theolog.pdf>

Studies

Basic:

Rodin A. *Renewing Foundations*. Past and future of foundations of mathematics (a chapter of the book in progress): <http://canoe.ens.fr/~rodin/spip/spip.php?article118>

Rodin A. V. *Euclid's Mathematics in Context of Plato's and Aristotle's Philosophy*, Moscow, 2003 –
A.B. Родин, *Математика Евклида в свете философии Платона и Аристотеля*. М., 2003.

Afonasin E. V., ed. *The Neopythagoreans* (A collection of Late Pythagorean writings in a Russian translation), *ΣΧΟΛΗ* 3.1 (Novosibirsk, 2009).

Gilbert D. *The Foundations of Geometry*

A Russian Translation online: http://ilib.mirror1.mccme.ru/djvu/geometry/osn_geom.htm

Gardies, Jean-Louis. *L'organisation des mathématiques grecques de Théétète à Archimède*. Paris, 1997

Heath T.L. *A History of Greek Mathematics*, in two vols. Oxford, 1921.

Thomas I. *Greek Mathematical Works*, in two vols. Cambridge, MA, 1980;

Cuomo, S., *Ancient Mathematics*. London/New York: Routledge, 2001, 2005².

Additional:

Cuomo S. *Pappus of Alexandria and the Mathematics of Late Antiquity*. Cambridge, 2000.

Klein Jacob. *Greek Mathematical Thought and the Origin of Algebra*. Translated from German by Eva Brann. Dover, NY 1968.

William F. Richardson, *Numbering and Measuring in the Classical World*. Bristol: Bristol Phoenix Press, 2004.

Barker A. *Greek Musical Writings*, in two vols. Cambridge, 1984–89;

Ван дер Варден Б.Л. *Пробуждающаяся наука. Математика Древнего Египта, Вавилона и Греции* (Москва, 1959, 2007)

Юшкевич А. П., ред. История математики, в 3-х тт. Москва 1970–1973
Раик А. Е. Очерки по истории математики в древности. Саранск, 1977.

The **MacTutor History of Mathematics archive**

<http://www-history.mcs.st-andrews.ac.uk/Indexes/Greeks.html>

SUPPLEMENTARY READINGS

- Blum R. Kallimachos. Alexandrian Library and the Origin of Bibliography. Madison, Wisc., 1991.
- Cruse Audrey, Roman Medicine. Stroud: Tempus, 2004.
- Fragmentsamlungen philosophischer Texte der Antike, ed. W. Burkert et al. Goettingen, 1999; Knorr W.R. Textual Studies in Ancient and Medieval Geometry. Boston, 1989; Mansfeld J., Runia D. Aetiana: The Method and intellectual context of a Doxographer. Dordrecht, 1997.
- Geus K. Eratosthenes von Kyrene. Muenchen, 2000.
- Goldstein B.R., Bowen A. The Introduction of Dated Observation and Precise Measurement in Greek Astronomy, *Archive for History of Exact Science* 43 (1991) 93-132.
- King, David A. In Synchrony with the Heavens: Studies in Astronomical Timekeeping and Instrumentation in Medieval Islamic Civilization. Brill: Leiden and Boston 2004.
- Manchester, Peter, The Syntax of Time. The Phenomenology of Time in Greek Physics and Speculative Logic from Iamblichus to Anaximander. Studies in Platonism, Neoplatonism, and the Platonic Tradition, 2. Leiden: Brill, 2005 (with my review in Bryn Mawr Classical Review: <http://ccat.sas.upenn.edu/bmcr>).
- Manuela Tecusan, The Fragments of the Methodists. Methodism outside Soranus. Vol. 1: Text and Translation. Studies in Ancient Medicine, 24/1. Leiden: Brill, 2004.
- Philip J. van der Eijk, (ed.), Hippocrates in Context. Papers read at the XIth International Hippocrates Colloquium, University of Newcastle upon Tyne, 27-31 August 2002. Studies in Ancient Medicine, 31. Leiden: Brill, 2005.
- Robert Hannah, Greek and Roman Calendars: Constructions of Time in the Classical World. London: Duckworth, 2005.
- Schiefsky, Mark J., Hippocrates. On Ancient Medicine. Translated with Introduction and Commentary. Studies in Ancient Medicine, 28. Leiden: Brill, 2005.