

Greek and Roman Studies 321  
ANCIENT TECHNOLOGY

**Course Outline**

Winter 2013

Instructor: Dr John Humphrey

Office: SS 530; email [humphrey@ucalgary.ca](mailto:humphrey@ucalgary.ca)

Office Hours: MWF 11:00-12:00, or by appointment; email consultation any time

Class Time: MWF 13:00-13:50

Classroom: EDC 386

Texts: J.W. Humphrey et al. *Greek and Roman Technology: A Sourcebook* (London: Routledge, 1998). Paper.

Essay/Exams: 1. A term paper is worth 40% of the final grade. Topics are to be chosen from the list that follows, or must receive my permission. Essays may be submitted at any time during the term, but no later than 13:00 on Friday 5 April 2013.

2. A midterm test, worth 20% of the final grade, will be based on the readings from the text and on the visual evidence presented in class, for the first half of the term.

3. A two-hour final examination, scheduled by the Registrar during the formal examination period in April (40% of the final grade), will consist of the equivalent of the midterm test, based on the material only from the second half of the course, together with an interpretive essay on a choice of general topics that draw on material for the whole course.

Notes: 1. I encourage you to maintain consultation with me throughout the term, to ask for help when you are floundering or confused, to discuss difficulties with your essays, and to keep me aware of unexpected absences.

2. The withdrawal deadline for this course is Tuesday 16 April 2013. You can track your current standing in the course through Blackboard. The last day to withdraw from this course with a refund of fees is Friday 18 January 2013.

3. The Department of Greek and Roman Studies draws the attention of all students in its courses to the University regulations on plagiarism, cheating, and other academic misconduct, which can be found in the on-line version of the 2012-2013 University Calendar ([www.ucalgary.ca/pubs/calendar/current/k.html](http://www.ucalgary.ca/pubs/calendar/current/k.html)).

4. Disabilities. It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8837. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. For more information, visit the Disability Resource Centre's website, <http://www.ucalgary.ca/drc>. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of the course.

## Course Schedule

DATE	UNIT	TOPIC	READINGS
Jan 09	We	Introduction to the course	
11	Fr	I Historical outline i: nomads and farmers of the Stone Ages	Sourcebook 1
14	Mo	I Historical outline ii: empires of the Bronze Age	Sourcebook 1
16	We	I Historical outline iii: the Greek and Roman Mediterranean	Sourcebook 1
18	Fr	II Sources of information: archaeology	Sourcebook xxii-xxiii
21	Mo	II Sources of information: ancient texts	Sourcebook xix-xxi
23	We	III Sources of energy, and basic machines in antiquity	Sourcebook 2a-b
25	Fr	III Hero of Alexandria and mechanical gadgets	Sourcebook 2c
28	Mo	IV Military technology	Sourcebook 12
30	We	V Agriculture i: cultivation and domestication	Sourcebook 3
Feb 01	Fr	V Agriculture ii: farms and agricultural tools	Sourcebook 3
04	Mo	V Agriculture iii: food-processing	Sourcebook 4
06	We	V Agriculture iv: diet	Sourcebook 4
08	Fr	VI Hydraulics i: wells and water-lifting devices	Sourcebook 8
11	Mo	VI Hydraulics ii: water conduction and water conservation	Sourcebook 8
13	We	VI Hydraulics iii: urban water systems: Athens and Rome	Sourcebook 8
15	Fr	<i>class cancelled</i>	
<i>Midterm break</i>			
25	Mo	VII Metals i: mining, metals, and smelting	Sourcebook 5a, 6
27	We	VII Metals ii: casting and fine metalworking	Sourcebook 9a
Mar 01	Fr	<b>Midterm test</b>	
04	Mo	VIII Ceramics i: ancient pottery making	Sourcebook 9d
06	We	VIII Ceramics ii: pottery shapes and styles	Sourcebook 9d
08	Fr	VIII Ceramics iii: glass; an ancient symposium	Sourcebook 9d
11	Mo	VIII Textiles	Sourcebook 9c
13	We	IX Transportation i: ships	Sourcebook 10b
15	Fr	IX Transportation ii: harbours	Sourcebook 10b
18	Mo	IX Transportation iii: wheeled vehicles, roads, and bridges	Sourcebook 10a
20	We	IX Transportation iv: currency, weights & measures, and trade	Sourcebook 10c
22	Fr	IX Time-keeping	Sourcebook 11a
25	Mo	X Writing i: Bronze-Age scripts: cuneiform and hieroglyphs	Sourcebook 11b
27	We	X Writing ii: alphabets: Greek and Latin	Sourcebook 11b
29	Fr	X Writing iii: books and publication	Sourcebook 11b
Apr 01	Mo	X <i>class cancelled</i>	
03	We	XI Construction i: Bronze-Age ziggurats and pyramids	Sourcebook 7
05	Fr	XI Construction ii: Bronze-Age Greek cities and citadels	Sourcebook 7
08	Mo	XI Construction iii: classical Greek construction	Sourcebook 7
10	We	XI Construction iv: Roman imperial engineering	Sourcebook 7
12	Fr	XII Ancient societies and their attitude to technology	Sourcebook 13
15	Mo	<i>class cancelled</i>	

## Essay Topics

If you choose to write your essay on one of the following topics, you do not need my approval (though I would encourage you to consult me). If you would like to write on a subject of your own devising, you must obtain my approval no later than Friday 1 February.

Essays should be no more than 12 double-spaced pages in length, inclusive of footnotes, bibliography, and illustrations. If you would find it helpful, you may submit to me in advance a one-page essay outline and an annotated bibliography, but this should be done at least ten days before the essay itself is due. Essays may be submitted at any time during the term, up to 13:00 on Friday 5 April, and will be graded in order of receipt; essays submitted later than 13:00 on 5 April will not be read, and will receive a grade of **F**.

- 01 Discuss the importance of the work of **either** Archimedes of Syracuse **or** Hero of Alexandria in the evolution of technology.
- 02 Read what the Roman engineer Vitruvius has to say about the ideal education of architects and engineers in the 1st century BCE. (*On Architecture* Book 1, Chapter 1). Should our Faculties of Environmental Design and Engineering follow his advice?
- 03 Pliny the Elder has been described as “an enthusiastic admirer of nature [and of superstition], and a vigorous critic of contemporary man. He is a sturdy Roman in his dislike of the Greeks and distrust of their influence.” First, read as much of Pliny’s *Natural History* as you can manage, and then evaluate the truth of the description above, and the impact that his personal beliefs and biases have on the reliability of his encyclopedic work.
- 04 Read a complete translation of Frontinus’ *On Aqueducts* and discuss its usefulness and reliability as a source of information about Roman urban water supplies. What errors does Frontinus make in his calculations of flow?
- 05 Why did Gordon Childe (*What Happened in History*) call the alphabet, coinage, and iron “popular” and “democratic” technologies?
- 06 “Form follows function.” Discuss the validity of this concept that the design of an object is determined principally by its intended use, using specific examples from three or four technologies, and from antiquity to the present day. Discuss, too, the influence a sense of aesthetics has had on the design of tools and other products of technology.
- 07 After studying the examples of cuneiform and hieroglyphs in works you can find in the library, first devise your own simple and logical pictographic script, including nouns, verbs, adjectives, and adverbs, and give me a short dictionary of your script, together with a brief document written in it (and an English translation, please!). For the second half of your paper, discuss how functional this form of writing is, and how influential are your own experiences and contemporary Canadian society in determining the symbols you use.
- 08 How did the local environments determine both the materials and the styles of construction in the Bronze and Iron Ages? What other factors affected these aspects?
- 09 Why did the ancient Greeks and Romans not experience an Industrial Revolution of the sort that occurred in Europe in the 18th and 19<sup>th</sup> centuries?
- 10 If you could travel back in time to the ancient Mediterranean world at the beginning of the first millennium CE, what single contemporary technological device would you take with you that would have the most positive and widespread impact on the society of the time? Remember that the device must be functional within the ancient limitations of machinery and fuel; and its effects must be overwhelmingly beneficial: no thermonuclear device for the Romans to use against the Parthians.

## General Bibliography

Some of the following works are housed in the Reserve Reading Room of the Library, where they are available for consultation and, infrequently, for short-term loan. Copies of the rest are available in the main stacks.

### General Works

J.P. Oleson, ed. *The Oxford Handbook of Engineering and Technology in the Classical World*.

C. Singer et al. *A History of Technology*, vols. 1 and 2.

T.K. Derry and T.I. Williams. *A Short History of Technology from the Earliest Times to A.D. 1900*.

A.P. Usher. *A History of Mechanical Inventions*.

V.G. Childe. *What Happened in History*.

K.D. White. *Greek and Roman Technology*.

R.J. Forbes. *Studies in Ancient Technology*, 9 vols.

L. Sprague de Camp. *The Ancient Engineers*.

H. Hodges. *Technology in the Ancient World*.

### Before the Greeks and Romans

K.P. Oakley. *Man the Toolmaker*.

S. Cole. *The Neolithic Revolution*.

### Classical Antiquity

E. Vermeule. *Greece in the Bronze Age*.

A. Burford. *Craftsmen in the Greek and Roman World*.

C. Mossé. *The Ancient World at Work*.

### Specific Technologies

K.D. White. *Roman Farming*.

J.F. Healy. *Mining and Metallurgy in the Greek and Roman World*.

A.T. Hodge. *Roman Aqueducts and Water Supply*.

L. Casson. *The Ancient Mariners*.

D. Diringer. *Writing*.

J.G. Landels. *Engineering in the Ancient World*.

D. Hill. *A History of Engineering in Classical and Medieval Times*.

### Bibliography

J.P. Oleson. *Bronze-Age, Greek, and Roman Technology: A Selected, Annotated Bibliography*.