HNPG025G: THE TESTAMENT OF TIME

Location: Olmstead Hall Honors Seminar Room OLMH 2312

INSTRUCTOR: NIGEL C. HUGHES
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UNITS:

4 unit course.

HOURS PER WEEK:

Seminar: 3 hours per week

One weekend fieldtrip to the Marble Mountains (~16 hours). Leaving ~7pm Friday 23rd April, back to Riverside, ~8.00pm Saturday 24th April 2010

One morning fieldtrip to the Norton Simon Museum of Asian Art in Pasadena (~5 hours). Saturday May 8th, 2010

Term paper ~ 2 hours per week.

PREREQUISITES: Honors program.

DESCRIPTION: This class considers the relationship between us as individuals, and the history of the Earth. It explores the ways in which we attempt to know Earth history, and the methods we use to do so. It stresses why an understanding of the past, both recent and truly ancient, is more critical now than at any other time in the history of our species. This is because our views on age of the Earth have a direct consequence for the way in which we approach pressing issues of the future. The class explores the development of both scientific and cultural views of the history of the Earth, and will trace how human understanding of history has itself evolved. We will explore the varied premises that different approaches use to arrive at their interpretations. We will also explore human attempts to comprehend the size and scale of the solar system and universe, the immense age of the Earth and universe, the achievements of those who have discovered this age and made explicit what it implies, and the human artistic attempts to transcend time’s moving but restrictive grasp.

SEMINAR THEMES, PROVISIONAL READING LIST, AND CLASS TIMELINE:
1/ Tuesday March 30. Introduction: the problem of historical inference, and introduction to the variety of views on Earth origins, age, and destiny. Temporal directionality and cyclicity.

Reading:

2/. Thursday April 1. The measurement of time: diurnal, lunar and annual cyclicity. Observation-based estimation of the distances of the Earth to the Moon, and the Earth to the Sun, and the comprehension of scale. Calendars.


5/. Tuesday April 13. History of western views of the age of the Earth - traditional Islamo-Judaic doctrine. St Augustine’s response to scriptural literalism. Medieval thought, and rise of progressivism.

Reading: Poem To his Coy Mistress Marvel. A.

6/. Thursday April 15. History of eastern views on the age of the Earth – Hindu/Buddhist thought. Concept of juga. Comparison of these concepts to Greek philosophical systems.

INITIAL PARAGRAPH ON PAPER CONCEPT DUE TODAY


7/. Tuesday April 20. What is this thing called Science? The basis of scientific knowledge. Exploration of the logic of scientific inference, with focus on logical positivism (induction) and falsification. The contrasts between scientific and non-scientific interpretations.


8/. Thursday April 22. The rise of scientific rationalism - understanding matter and space. The structure and mechanics of the solar system, Ptolemy to Newton. Establishment of scientific laws.


FIELD TRIP TO MARBLE MOUNTAINS


10/. **Thursday April 29.** The establishment of the geological timescale, and the advent and rise of methods of absolute dating of rocks. The representation of time in the stratigraphic record.


**BIBLIOGRAPHY DUE TODAY**

11/. **Tuesday May 4.** Astrogeology - the representation of astronomical phenomena in the geological record: tidal cycles, varves, invertebrate growth banding and sclerochronology, Milankovitch cycles, ice core records,


**MARBLE MOUNTAINS FIELDTRIP REPORT DUE TODAY**

12/. **Thursday May 6.** The structure and arguments of *The Origin of Species*. Darwin’s views of geological time.


May 8th Fieldtrip to Norton Simon Museum

13/. **Tuesday May 11.** The genetic basis of development and its evolutionary modification: Evolutionary Developmental Biology and the integration of the historical record of life with that of the living.


14/. **Thursday May 13.** Major events in the history of life on Earth 1: origin of life, of cellular compartmentalization, of sex, of multicellularity, of animals and plants.


NORTON SIMON FIELDTRIP REPORT DUE TODAY


19/. Tuesday June 1. The influence of the concept of “deep time” on humankind’s view of its place in natural history - western literature and art, Indian literature and art. Particular emphasis on 20th century poetry of Philip Larkin and Rabindranath Tagore.

FINAL PAPER DUE TODAY.


iLEARN: Note that Powerpoint presentations of the seminars will be available to download from the Ilearn server (www.ilearn.ucr.edu).

TEXTBOOKS: Multiple readings will be assigned. Three books that are essential to the course are:


Some useful additional references include:


TIMES: Tuesday and Thursday from 02:10pm - 03:30pm

OFFICE HOURS: (Room Pierce 3306): Friday 9am-12pm

EXAM: There is no final exam.

EVALUATION: Letter grade. 50% of evaluation based on seminar participation, 50% on term paper.

Information about the Paper

It will be a multipart paper, in extended essay format. One component will be two separate reports on the fieldtrips that will be part of the class. The reports will require that students demonstrate comprehension of the objects observed and their significance to the class. I will be expecting that the report on the Norton
Simon Museum visit is about 1.5 pages, and report of the Marble Mountain trip is about 3 pages long.

The bulk paper will be a substantial essay of about 10 pages length. In this essay I expect you to explore issues that relate to and develop the concepts explored in the class. I expect the papers to develop carefully reasoned and appropriately illustrated arguments or discussions of particular themes covered in class that are of interest to you. Here are some possible examples of topics:

The representation of the age and history of the Earth in eastern and western poetry.

The historical development of the western calendar and its astronomical basis.

The history and methodology of methods for absolute dating of the ages of rocks.

The age and history of the Earth in the development of Greek philosophical thought.

In order to help you prepare you papers in good time you need to present me with a paragraph outlining your planned paper at the end of week 3 of the class (Thursday, April 15). I will then discuss the concept of each paper with you individually. A bibliography is required at the end of week 5 (Thursday April 29), which will keep you moving with the paper, insure its feasibility and make sure that it is of appropriate scope. **The final paper is due on June 1**, which is the penultimate class.

What sort of research will be required?

In addition to absorbing the information and concepts presented in class, the paper will require serious review of literature, including both primary sources, and synthetic accounts. I will be able to provide entry into the literature for subjects spanning the scope of the class. I anticipate that you will need to spend considerable time delving into the literature and using various search engines to assemble the sources from which to build your account. The class is intended to stimulate interdisciplinary thinking and discourse, and I encourage you to develop your own perspectives on the topics chosen - but all such perspectives must supported by rigorous justification that is germane to the topic and approach used. Papers must be based on an understanding of the fundamental basis of the subject that is being explored.