HNRS 240—HISTORY OF SCIENCE SYLLABUS

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August 28 *** Introduction, Organization
The nature of science
Numbers

Sept 4 —NO CLASS—LABOR DAY

Sept 11 archeoastronomy, phases of the moon,
Greek and Alexandrian science
QUIZ on numbers

Sept. 18 *** Islamic science
QUIZ on Rubaiyat

Sept 25 *** introduction to sInvestigator—bring computer

Oct 2 *** Copernicus, Brahe, Kepler
QUIZ on *Sidereal Messenger*

Copernican system with sInvestigator—bring computer

Oct 10 *** Newton, Maxwell

OCT 9—FALL BREAK—CLASS MEETS ON TUESDAY, OCT 10

Oct 16 MIDTERM I
The science of life

Oct 23 Rough draft presentations

Oct 30 *** Class presentations

Nov 6 Individual meetings with instructor

Nov 13 *** Evolution
QUIZ on *Origin of Species* (Ch 1-4)
Evolution with sInvestigator—bring computer
Nov 20  cell theory, modern medicine, Preview of Modern Science

Nov 27  individual meeting with instructor to discuss term paper

Dec 4 ***  term paper presentations
           MIDTERM II

*** PLEASE BRING YOU COMPUTER TO THESE CLASSES

Reading:

SWH – Science in World History, James Trefil

Sidereus Nuncis, or The Sidereal Messenger—Galileo Galilei

Origin of Species—Charles Darwin

Rubaiyat—find the poem on the web

GRADING
   Exams/ quizzes—40%
   Presentation and class participation—35%
   term paper—25%
HNRS 240 INFORMATION

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GENERAL INFORMATION

This is a course that will cover the development of science from the earliest times to 1900. No previous knowledge of science will be assumed, and scientific concepts will be introduced when necessary. Attendance will not be taken, but each student is responsible for material presented and announcements made in class.

REQUIREMENTS

There will be weekly readings from the primary text, as outlined in the syllabus. In addition, as outlined in the syllabus, there will be reading assignments from two supplementary texts. A quiz on material from these texts will be given on the day the reading assignment is due, and may be included in other quizzes and exams. Additional reading assignments will be made from time to time.

At the instructor’s discretion, there will be occasional short quizzes. These quizzes will always be announced a week in advance. There will be two midterm exams, which will consist of short answer essay questions. In lieu of a final exam, students will write a term paper due on the last day of class. Information on the term paper will be passed out later.

Finally, students will form small research groups of approximately five students each and prepare a PowerPoint presentation, choosing their topic from a list supplied by the instructor. Groups will give a ‘rough draft’ presentation for the instructor and, after incorporating his comments, a full scale presentation to the class. This will be followed by individual meetings with the instructor for comments.

The weight of each of the assignments will be as follows:

+ Midterm exams: 40%
+ Presentation and class participation: 35%
+ Quizzes: 25%
A NEW METHOD OF TEACHING

HNRS 240

This semester you will be given a chance to participate in testing a new method of science instruction, based on artificial intelligence programs developed at the Volgenau School of Engineering. Two important advances in science — the adoption of the Copernican model of the solar system and Darwin’s theory of evolution — will be taught using a program called sInvestigator. You will be introduced to the system by people from the Volgenau School on Sept. 25-- the Copernican system will be the subject for the class on Oct 2, and the theory of evolution will be taught on Nov 13. For each of these two subjects you will be asked to take a pretest (whose grade will not count toward your class grade) and a post test (whose grade will be counted). The purpose of these tests is to see how well the system is working in teaching basic science. They will be administered by people from the School of Education.

PLEASE BRING YOUR COMPUTER TO CLASS ON ALL DAYS INDICATED BY *** IN THE SYLLABUS

In addition, from time to time other short online tests will be administered in order for members of the sInvestigator team to carry out their evaluation of the system.

As I have told other students who participated in the development of this system, you may be in at the ground floor of a major change in science education, or you may be in at the ground floor of a major fizzle. In science, you never know how things will turn out in advance.
LIST OF POSSIBLE TOPICS FOR PRESENTATION

The rise of railroads
Canals
The Electrification of America
The internal combustion engine
Phlogiston/Caloric *
The Rise of Agricultural Technology
The development of the telescope or microscope
Chinese Astronomy *
Chinese Medicine
Indian Mathematics
Debate Over the Reality of Atoms *
Trial of Galileo
Newton’s Alchemy or Theology *
Development of Energy Sources
*may be challenging

You may choose other topics with the consent of the instructor
Additional topics may be added with the consent of the instructor