

UC 10507 09F

CBM003 ADD/CHANGE FORM

APPROVED DEC 09 2009

Undergraduate Council
 New Course Course Change
 Core Category: WI-ID Effective Fall 2010

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or

Graduate/Professional Studies Council
 New Course Course Change
 Effective Fall

RECEIVED OCT 16 2009

1. Department: Interdepartmental College: NSM
2. Faculty Contact Person: Ioanna Semendeferi Telephone: 33544 Email: isemendeferi@uh.edu
3. Course Information on New/Revised course:
 - Instructional Area / Course Number / Long Course Title:
IDNS / 4392 / History of 20th Century Science
 - Instructional Area / Course Number / Short Course Title (30 characters max.)
IDNS / 4392 / HISTORY OF SCIENCE
 - SCH: 3.00 Level: SR CIP Code: 45.0804.00 01 Lect Hrs: 3 Lab Hrs: 0
4. Justification for adding/changing course: To provide for new discipline areas
5. Was the proposed/revised course previously offered as a special topics course? Yes No
 If Yes, please complete:
 - Instructional Area / Course Number / Long Course Title:
IDNS / 4397 / History of 20th Century American Science
 - Course ID: 31936 Effective Date (currently active row): _____
6. Authorized Degree Program(s): _____
 - Does this course affect major/minor requirements in the College/Department? Yes No
 - Does this course affect major/minor requirements in other Colleges/Departments? Yes No
 - Can the course be repeated for credit? Yes No (if yes, include in course description)
7. Grade Option: Letter (A, B, C ...) Instruction Type: lecture ONLY (Note: Lect/Lab info. must match item 3, above.)
8. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title
 _____ / _____ / _____
 • Course ID: _____ Effective Date (currently active row): _____
9. Proposed Catalog Description: ENGL 1304 and (If there are no prerequisites, type in "none".)
 Cr: 3. (3-0). Prerequisites: Credit for or registration in 12 hours of natural science courses. Description (30 words max.): Analyzes central issues in the evolution of science during the past century.
10. Dean's Signature: _____ Date: 13 Oct '09
 Print/Type Name: _____

U N I V E R S I T Y *of* H O U S T O N

CORE CURRICULUM COURSE REQUEST

Originating Department/College: Natural Sciences and Mathematics

Person making request: Ionna Semenferedi Telephone: 33544

E-mail: isemenferedi@uh.edu

Dean's signature: _____ Date: _____

I. General Information:

Course number and title: IDNS 4392 History of 20th Century Science

Catalog description must be included on completed CBM 003 form and attached to this document.

Category of Core for which course is being proposed (mark only one):

- Communication
- Mathematics
- Mathematics/Reasoning (IDO)
- American History
- Government
- Humanities
- Visual/Performing Arts Critical
- Visual/Performing Arts Experiential
- Natural Sciences
- Social/Behavioral Sciences
- Writing in the Disciplines (IDO)

II. Objectives and Evaluation (respond on one or more separate sheets):

Call ext. 3-0919 for a copy of "Guidelines for Requesting and Evaluating Core Courses" or visit the website at www.uh.edu/academics/corecurriculum

- A. How does the proposed course meet the appropriate Exemplary Educational Objectives (see **Guidelines**). Attach a syllabus and supporting materials for the objectives the syllabus does not make clear.

A central theme of the course is the evolution of several natural sciences during the 20th century. Therefore, the course enables the student to understand the origins of his/her

current or neighboring field of study and what it took to reach that point. The course involves substantial reading, which is bound to increase the student's general and science language skills. It also helps the student develop coherent argumentation and critical thinking through specially designed discussion sessions. As the course and the dialectic sessions progress the student needs to put in short form (1-2 pages) his/her position on the evolution of each discipline. These short essays prepare the student for the two major essays (mid-term and final). Each major essay is a paper at least 15 pages long, where the student addresses a specific issue or issues in the evolution of a discipline. All the writings are promptly commented for articulate content and grammatical and syntax form by the instructor.

- B. Specify the processes and procedures for evaluating course effectiveness in regard to its goals.

Two metrics will be used: (a) The performance of the student in the writing assignments from the beginning to the end of the semester. If the course works well the statistical average should be a monotonically increasing function, as the students should become better and better. The course involves several short and long writing assignments, thus, time series analysis is possible. (b) The evaluation scores and comments of the students at the end of the semester.

- C. Delineate how these evaluation results will be used to improve the course.

Regarding the objective metric (time series analysis), depending on the results certain foci may change. For example, if the analysis shows that students consistently improve content-wise but not form-wise, may be one or two lectures on writing form are added. Regarding the subjective metric (student evaluations), any persistent commentary that emerges as a pattern will be taken into account and relevant changes will be incorporated in the course.

SVP. Effective 5/2/08. Replaces all previous forms, which may no longer be used.

Syllabus

History of Twentieth-Century American Science

Instructor: Dr. Ioanna Semendeferi **E-Mail:** isemendeferi@uh.edu

Office: Science & Research Building 1, Room: 227E

Office Phone: (713) 743-3544

Description

Twentieth century was the century of science and technology. Using history, this course analyzes central issues in the evolution of science and technology during the past century. How did science change from "little science" to "BIG SCIENCE"? How did "pure science" and "simple collaboration" become "entrepreneurial" and "teamwork science"? What were the transformations that science and technology underwent during the Great Depression and the two World Wars? How did the Cold War shape and in turn was shaped by the development of science and technology?

The course addresses some of the above questions and attempts to enrich the understanding of how American society influenced and in turn was influenced by the development of science and technology in twentieth century. In particular, this course focuses on the following themes: The enormous influence of scientific experts in the progressive era of the early twentieth century; the eugenics movement; the development of genetics; the emergence of molecular biology and its relationship to physics; the Manhattan Project; NASA and the Space Program; the rise of environmental science; the Human Genome Project.

Requirements

This is an intensive reading and writing course. It includes lectures, presentation of documentary films, student presentations, discussion of assigned readings, and substantial writing. Students need to keep up with the reading and writing assignments all the time.

Discussion: For *every* topic, there are classes exclusively devoted to discussion (please see specifics in the Course Outline section below). The discussion takes place between individual students or groups of students and the instructor acts as the moderator. Students should carefully read the assigned material (book chapters/articles) and bring comments and issues in the discussion classes.

Response Statements (Length: 1-2 pages): For every topic students provide the instructor with a "Response Statement" on the particular topic (please see the specifics in the Course Outline section below). In this statement the student should respond to the readings. That is, he/she should analyze the author's thesis/evidence and present his/her interpretation of the issues in the evolution of the discipline.

Exams (Length: 15-20 pages): There is one mid-term and one final take-home essay (please see specifics in the Course Outline section below).

Grading: Discussion and response statements: 30%

Mid-term take-home essay: 30%

Final take-home essay: 40%.

Prerequisite: Seniors 12 hours of NSM courses

Maximum number of students: 20 students

Recommended Approach: In the discussions and writings the student should try to develop thoughtful arguments and comments. He/she should avoid presenting a simple summary of case facts. The goal is to *analyze* the issues involved in each topic. Central themes of the course are the evolution of science and its interaction with society.

Course Readings/Packet: There are 8 required books for the course. Any additional required readings will be provided in class.

1. Lawrence Badash, *Science and the Development of Nuclear Weapons: From Fission to the Limited Test Ban Treaty, 1939-1963* (Atlantic Highlands, NJ: Humanities Press International Inc., 1995)
2. Allan M. Winkler, *Life Under a Cloud: American Anxiety About the Atom* (Urbana, IL: University of Illinois Press, 1999)
3. Christian C. Young, *The Environment and Science: Social Impact and Interaction* (Santa Barbara, CA: ABC-CLIO, Inc., 2005)
4. Diane B. Paul, *Controlling Human Heredity: 1865 to the Present* (Atlantic Highlands, NJ: Humanities Press International, Inc., 1995)
5. Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (New York: Alfred A. Knopf Inc., 1995)
6. Robert Cook-Deegan, *The Gene Wars: Science, Politics, and the Human Genome* (New York: W.W. Norton & Company Inc., 1994)
7. Thomas P. Hughes, *American Genesis: A Century of Invention and Technological Enthusiasm, 1870-1970* (New York: Penguin Books Inc., 2004)
8. Howard E. McCurdy, *Inside NASA: High Technology and Organizational Change in the U.S. Space Program* (Baltimore: John Hopkins University Press, 1993)

Course Outline

TOPIC 1: Ecology and Environmental Science

Two Lectures, One Documentary Film, Two Discussion Sessions

FILM: "Silent Spring" [1992]

REQUIRED READINGS:

***Christian C. Young, *The Environment and Science* (Santa Barbara, CA: ABC-CLIO, Inc., 2005): (Preface-Epilogue; pp. ix-p. 213)

***Jessica Wang, "Ethics and Social Responsibility in Science," in Marc Rothenberg (ed.), *The History of Science in the United States: An Encyclopedia* (New York: Garland Publishing Inc., 2001), pp. 190-193

TOPIC 2: The Atomic Age

One Lecture, Two Documentary Films, Two Discussion Sessions

FILM: "The Day After Trinity" [1980]

FILM: "The Atom and You" [1953] &

& "Half-Life: A Parable for the Nuclear Age" [1986]

REQUIRED READINGS:

***Lawrence Badash, *Science and the Development of Nuclear Weapons: From Fission to the Limited Test Ban Treaty, 1939-1963* (Atlantic Highlands, NJ: Humanities Press International Inc., 1995): All Chapters (Introduction-Ch. 6; pp. 1-114)

***Allan M. Winkler, *Life under a Cloud: American Anxiety About the Atom* (Urbana, IL: University of Illinois Press, 1999): All Chapters (Prologue-Epilogue; pp. 3-214)

TOPIC 3: Eugenics and Genetics

Three Lectures, Two Discussion Sessions

REQUIRED READINGS:

*** Diane B. Paul, *Controlling Human Heredity: 1865 to the Present* (Atlantic Highlands, NJ: Humanities Press International, Inc., 1995): All Chapters (Ch. 1-Ch. 7; pp. 1-135)

***Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (New York: Alfred A. Knopf Inc., 1985): All Chapters (Ch. 1-Ch. 19; pp. 3-301)

TOPIC 4: The Human Genome Project

Two Lectures, Two Discussion Sessions

REQUIRED READINGS:

***Robert Cook-Deegan, *The Gene Wars: Science, Politics, and the Human Genome* (New York: W.W. Norton & Company Inc., 1994): (Preface-Ch. 13; pp. 9-185) AND (Ch. 16-Epilogue; pp. 231-352)

TOPIC 5: Technological Dreams and Realities

Three Lectures, Two Discussion Sessions

REQUIRED READINGS:

***Thomas P. Hughes, *American Genesis: A Century of Invention and Technological Enthusiasm, 1870-1970* (New York: Penguin Books Inc., 1989)

TOPIC 6: Space Science

One Lecture, One Documentary Film, Two Discussion Sessions

FILM: "Challenger: The Untold Story" [2006]

REQUIRED READINGS:

***Howard E. McCurdy, *Inside NASA: High Technology and Organizational Change in the U.S. Space Program* (Baltimore: John Hopkins University Press, 1993): All Chapters (Introduction-Conclusion; pp. 1-174)

***Diane Vaughan, *The Challenger Launch Decision* (Chicago: University of Chicago Press, 1997): (Ch. 1; pp. 1-32)