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**LMC 3302**

**Science, Technology, and Ideology**

**Course Prerequisite**

English 1102

**Core Area/Attribute fulfilled by this class**

Humanities: Examines specific scientific, philosophical, and literary/cultural texts in order to determine the role ideology plays in the construction of culture, especially scientific and technological culture.

**Course Description**

Science, Technology, and Ideology: An Exploration of Science and Scientists through Literature. The class will read, discuss, and write about several books written by scientists or science journalists about science, science-related issues, or cutting-edge research. These are books specifically written for the popular culture, such as Eric Kandel’s IN SEARCH OF MEMORY, Brian Greene’s THE ELEGANT UNIVERSE, Hodge’s ALAN TURING, THE ENIGMA, and others in this genre.   
  
Course Catalog Information

Examines specific scientific, philosophical, and literary/cultural texts in order to determine the role ideology plays in the construction of culture, especially scientific and technological culture.

**Learning Outcomes**

Science and Technology Knowledge Construction: Students will understand that scientific and technological innovation occurs in a social context, and they will be able to recognize how the social influences science and technical discourses.

Textual/Visual Analysis: Students will learn to read, analyze, and interpret not only cultural projects such as film, literature, art, and new media, but also scientific and technical documents.

Interpretive Frameworks: Students will become familiar with a variety of social, political, and philosophical theories and be able to apply those theories to creative and scientific texts, as well as to their own cultural observations.

Communication Skills: Students will be able to gather, organize, and express information clearly and accurately, with sensitivity to will be able to do so both by using traditional media and by tapping the potential of new digital media

Historical Analysis: Students will study literary and cultural texts within an historical framework to become familiar with the various forces—including those of gender and racial biases, access to those who control governments and governmental largesse, and war--that shape commercial/technological production and scientific goals, theory, and research. They will learn to interpret history actively, rather than passively accepting archival information.

Ethical Analysis: Students will compare and contrast the ethical choices scientists made by examining the culture in which these choices were made, and the import of these choices to the individual and to society. They may thereby recognize themselves as participants in a particular culture and see how this affects their experiences and values. They will develop the ability to apply knowledge of historical, social, and cultural influences to understanding the process of doing science and participating in the transmutation of science to technology within the framework of historical influences. They will recognize that ethical choices exist and must be made in scientific discourse and practice. They will become aware of the ways that culture shapes ethical views and can critically evaluate those views.

Introduction

This class will use biography, historical texts, and analytic resources to illuminate the ways in which culture, technology, and the state influence science, scientific change, and society at large. We will examine the ways in which religion, class, ideology, zeitgeist, political movements and war suppressed, enhanced, or otherwise influenced scientists, science, and the technologies that emerged from these confluences.

Beginning with the life and work of Charles Darwin (DARWIN, Desmond and Moore) we will examine the cultural influences within which he formulated his theory. Then we will move through the unfolding of the discoveries in physics, mathematics, and electronics which changed the political tenor of the world through examining the lives of Lise Meitner (LISE MEITNER AND THE DAWN OF THE NUCLEAR AGE, Rife), Alan Turing (TURING, THE ENIGMA, Hodges) and Richard Feyman (GENIUS, Gleick). We will use ONE WORLD OR NONE to analyze the concerns raised by the unleashing of atomic weaponry. We will then return to biological concerns with James Crick (WHAT MAD PURSUIT) and Eric Kandel (IN SEARCH OF MEMORY). Freeman Dyson’s THE SCIENTIST AS REBEL will provide ancillary readings.

Early in the semester we will create seven teams of five students; each team will concentrate on one of the scientists and develop a presentation to be given in class.

We will devote roughly 3-4 class sessions to each scientist. These classes will consist of discussions, lectures, your presentations, suggested readings, and media.

**Grades**

Discussion is key to this class; I expect lively discussions. It is therefore important to keep up with the readings to ensure that you can participate. There will be a short analytic paper (2-3 pages) on Darwin due February 1st. I will occasionally give pop quizzes to be sure that the material is being read. The questions will be simple but difficult to answer without having read the assigned material. Other graded assignments will consist of your presentation, two exams, and a final research paper.

Short Analytic Paper 10%

Quizzes Total 10%

Presentation 20%

Exam #1 20%

Exam #2 20%

Final Research Paper 20%

**Required Reading**  
DARWIN, Desmond and Moore

DARWIN, Ed. Appleman, 3rd Edition, W.W. Norton – Readings to be assigned

LISE MEITNER AND THE DAWN OF THE NUCLEAR AGE, Patricia Rife

TUXEDO PARK: A WALL STREET TYCOON AND THE SECRET PALACE OF SCIENCE THAT CHANGED THE COURSE OF WWII, Jennet Conant

GENIUS, James Gleick

ONE WORLD OR NONE, Ed. Masters and Way

WHAT MAD PURSUIT, Crick

THE SCIENTIST AS REBEL, Dyson

IN SEARCH OF MEMORY, Kandel

**Assignments and Grading**

You will write a short analytic essay, participate in a team research project, take two exams and several quizzes, and write a final research paper for this class. You will have ample opportunity to discuss all assignments with me and with your peers before they are due; thus, ALL GRADES FOR THIS COURSE ARE FINAL—I will not listen to any arguments that your grade should be improved. You are always welcome to complete assignments before they are officially due. Furthermore, I generally grant paper extensions if you ask for them by email at least 48 hours before the due date. Do not tell me why you need the extension; just give me an alternative date when you will turn in your assignment. Please note that failure to complete any major component of the course may result in failure of the course as a whole. If you are having difficulties meeting class requirements, be sure to talk to me immediately—again, I will not listen to arguments that your grade should be changed after the fact.

**Attendance**

I will take roll at the beginning of each class. You will have three unexcused absences to use as you will. If you have a family emergency and provide me with a note from the proper authority, if you must be out of town for a GT extracurricular activity and provide me with a note from your coach or faculty advisor, or if you have an internship or job interview and provide me with documentation from the company (such as an invitation), these absences are also excused. I will also have three excused absences, and if I take them they will be for a family or personal medical emergency or for transportation reasons. In the event that I am not able to make it to class because of the abovementioned reasons, I will make every effort to inform you before class meets. If there is such an occasion, I may provide a film/interview about writers or writing for you to view or I may cancel the class. I will be away from campus on March 17th to attend the International Conference for the Fantastic in the Arts in Orlando, FL and class will not meet that day. We will meet during the Week Preceding Final Exams, but we will have no final exam and will not meet during exam week.

I expect that you will not check email or phone while in class. Your computer will be closed unless otherwise instructed for research or for class work; if you are engaged in these activities I will assume that you are choosing to not participate in the class.

**Students with Disabilities** should self-report to the Access Disabled Assistance Program for Tech Students at 220 Student Services BuildingAtlanta, GA 30332-0285 404.894.2564 (voice)/404.894.1664 (voice/TDD)

www.adapts.gatech.edu/guidebook.html

**Scholastic Dishonesty and Academic Misconduct**

All of the writing you submit for this course must be your own. If I suspect you of plagiarizing any part of a project, (passing off someone else’s writing as your own), I will submit your name and the particular project to the Dean of Students, who will then take the appropriate disciplinary action. The Georgia Tech honor code (at www.honor.gatech.edu/honorcode/honorcode.html)defines academic misconduct as:

Possessing, using, or exchanging improperly acquired written or verbal information in the preparation of any essay, laboratory report, examination, or other assignment included in an academic course;

Unauthorized collaboration with a student in the commission of academic requirements;

False claims of performance or work that has been submitted by the claimant;

Forgery, alteration, or misuse of any institute document relating to the academic status of a student. Plagiarizing is defined by Webster’s as “to steal and pass off (the ideas or words of another) as one's own : use (another's production) without crediting the source.

If caught plagiarizing, you will be dealt with according to the GT Academic Honor Code.

Do not cut and paste any of your paper, or otherwise use sentences from any author other than yourself without proper citation. Such use will be considered plagiarism. You may not use another’s words without attribution, whether the text has been previously published or has never been published; all work must be your own. This includes the use of “word,” word being any material you may have acquired from a previous semester of this class.

Consult http://mlaformat.org/ for guidelines regarding citation as well as proper format to use when submitting any type of paper required for this course.

Unless specifically identified as group work; quizzes, tests, take–home-tests, homework, etc. are to be completed alone.

When working on individual homework, you may not work with other students, and doing such is a violation of the GT Academic Honor Code. Submitting any work other than your own is also a violation of the Academic Honor Code.

When working on a team or in a group for work to be submitted in this class, you must turn in separate copies (or one copy), of the homework with the following written on it: your name and the names of everyone you collaborated with.

Cheating off of another person’s test or quiz is unethical and unacceptable. Cheating off of anyone else’s work is a direct violation of the GT Academic Honor Code, and will be dealt with accordingly.

Unauthorized use of any previous semester course materials, such as tests, quizzes, homework, projects, and any other coursework, is prohibited in this course. Using these materials will be considered a direct violation of academic policy and will be dealt with according to the GT Academic Honor Code.

For any questions involving these or any other Academic Honor Code issues, please consult me, my teaching assistants, or [www.honor.gatech.edu](http://www.honor.gatech.edu).

**READING AND DISCUSSION SCHEDULE**

In general, we will spend three days on each scientist.

TH January 13: General discussion of class.

T January 18: Darwin—discussion and lecture. Possible screening of a Darwin documentary.

TH January 20: Darwin documentary.

T January 25: Discussion of pages 1-298 of DARWIN, Desmond and Moore, “Evolution of Ethics,” Thomas Huxley, pages 501-503, and one version of the famous Oxford

Evolution Debate between Wilberforce and Huxley at

<http://en.wikipedia.org/wiki/1860_Oxford_evolution_debate>

TH January 27: DARWIN

T February 1: DARWIN. Intro to Lise Meitner

TH February 3 Darwin conclusion. Formation of teams. Each team will create a presentation based on one of the scientists we are covering in the class. The presentations will begin in March.

T February 8: Short analytic paper due. Email to [kathleen.goonan@lcc.gatech.edu](mailto:kathleen.goonan@lcc.gatech.edu) and [kathleen@goonan.com](mailto:kathleen@goonan.com) by 1:35 pm or sooner. Bring hard copy to class.

Screening Lise Meitner documentary.

TH February 10: Discussion, Lise Meitner

T February 15: Meet with teams in-class. Bring computers for in-class research. Divide your area of research into five components and decide who will present each.

TH February 17: Lise Meitner and intro to TUXEDO PARK and Loomis

T February 22: Exam #1

TH February 24: Video, TUXEDO PARK

T March 1: Review of Exam #1 Results

TH March 3: Meitner Presentation

T March 8: Turing Presentation

TH March 10: TUXEDO PARK Discussion

T March 15: Loomis Presentation

TH March 17: No class meeting. Professor at professional meeting. **Use this day as a research/writing day for final paper**. Correspond with professor via email with drafts or questions. I will be glad to evaluate your draft and make suggestions. Begin reading GENIUS by James Gleick and ONE WORLD OR NONE.

March 23 and 25 Spring Break. I suggest you read GENIUS by Gleick and ONE WORLD OR NONE during this time, and budget your time regarding WHAT MAD PURSUIT, IN SEARCH OF MEMORY, and THE SCIENTIST AS REBEL, which you will need to have read by various dates in April, accordingly.

T March 29: Feynman video and ONE WORLD OR NONE discussion assigned texts.

TH March 31: Feynman Presentation

T April 5: Feyman and ONE WORLD OR NONE discussion. Brief quiz, 5% of total grade: WWII and Loomis, Feynman, reactions to atomic bomb.

TH April 7: Crick Presentation and discussion, WHAT MAD PURSUIT

T April 12: Kandel Presentation and discussion, IN SEARCH OF MEMORY

TH April 14: Discussion of Crick, Kandel, and the biological sciences post WWII: Public reaction to possibilities. Brief quiz, 5% of total grade, on Crick, Kandel, and biological sciences post-WWII.

T April 19: Dyson Presentation and discussion, THE SCIENTIST AS REBEL.

TH April 21: Dyson discussion and exam prep. Exam will cover TUXEDO PARK, GENIUS, ONE WORLD OR NONE, WHAT MAD PURSUIT, and IN SEARCH OF MEMORY.

T April 26: Exam #2

TH April 28: Class wrap-up. Come to class prepared to discuss three things you have learned.

T May 3: Research paper due by email by 3:05 pm or earlier.

Suggested Reading

These are some of the books I considered using for this course before I made my final selection. Any or all of them would have also been excellent choices.

CHARLES DARWIN: A BIOGRAPHY, VOL . 1—VOYAGING, Janet Browne

CHARLES DARWIN: A BIOGRAPHY, VOL. 2—THE POWER OF PLACE, Janet Browne

*Note: This two-volume biography is definitive. It does an excellent job of showing Darwin’s intellectual relationships, milieu, and strategies. I suggest obtaining it if you plan to write a research paper or do a presentation related to Darwin.*

THE VOYAGE OF THE BEAGLE, Charles Darwin

ON THE ORIGIN OF SPECIES, Charles Darwin

THE DESCENT OF MAN, Charles Darwin

*Note: These three books are available online at Literature.org,*

[*http://www.literature.org/authors/darwin-*](http://www.literature.org/authors/darwin-)*charles/*

INFINITE IN ALL DIRECTIONS, Freeman Dyson

FROM EROS TO GAIA, Freeman Dyson

DISTURBING THE UNIVERSE, Freeman Dyson

TURING, THE ENIGMA, Alan Hodges

THE ELEGANT UNIVERSE, Brian Greene

DARWIN’S DANGEROUS IDEA, Daniel Dennett

THE MAKING OF THE ATOMIC BOMB, Richard Rhodes

Ancillary Reading

These are companion books to the abovementioned nexus of books. They may be of interest if you want to extend your exposure to the subjects, times, and individuals we will be exploring in this class. They may also prove useful for your presentations or papers.

THE CULTURE OF TIME AND SPACE 1880-1918, Stephen Kern

LISE MEITNER, Ruth Lewis Sime

AMERICAN PROMETHEUS (Oppenheimer), Bird and Sherwin

THE SUN, THE GENOME, AND THE INTERNET, Freeman Dyson

WHAT TECHNOLOGY WANTS, Kevin Kelly