



# SCI 10 – Science and Society

Chemistry Department, School of Science and Engineering  
2<sup>nd</sup> Semester, SY 2009-010

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## A. Course Description

The objective of this course is to present a synthesis of the most significant scientific principles of modern times, and in doing so, discuss the impact of science on culture and society and provide a more holistic understanding of the nature of science and technology. The course will also discuss the most significant theories of science. The approach is interdisciplinary and shall cover the various sciences including physics, biology, chemistry, and earth and environmental science, as well as their sub-disciplines such as cosmology, materials science, and molecular biology. The course shall consist of lectures and special seminars, readings, discussions, and written and oral papers.

## B. Course Objectives

By the end of the course, you should have gained insight into the practice of science common to the different natural science disciplines. You should have developed logical, analytical and critical thinking inherent in the practice and process of science. You should have been exposed to contemporary issues in the realm of S&T in the Philippines, whose outcomes are determined largely by non-science factors.

You should be able to examine how scientific discoveries and innovations in technology interact with social, economic, and political factors and personal decisions in shaping the past, present, and future.

## C. Required Readings

*Romancing Science: Readings in Science and Society* (2003) M.A.C. Cuyegkeng, ed. Quezon City: Ateneo de Manila University Office of Research and Publication (available at the LS Bookstore, MVP Center Basement).

We will also devote time every Friday (or the next class day after a Thursday) to a recitation/discussion of the previous Thursday's Star Science column in the Business Section of the Philippine Star (also available online at <http://www.philstar.com> under Business Features>Science and Technology every Thursday). This regular local column reflects S&T perspectives by Filipino scientists and friends from here and around the world.

## D. Suggested Readings

Hand-outs and supplemental readings are to be given out during the semester. Look for additional readings from newspapers, online periodicals, and other resources. See the class website at <http://nrojas.wordpress.com/sci-10/> for additional links and resources. Dr. Rojas also shares links of interest on her FaceBook account and posts essays and book reviews on <http://nrojas.multiply.com>.

S&T issues are also discussed in popular books and films, both fiction and non-fiction. We encourage you to explore some of these and discuss them in the context of our class. A bonus oral examination will be held towards the end of the semester on any of the following:

Non-fiction books:

- "The World Is Flat: A Brief History of the 21st Century" (2005) by Thomas L. Friedman. (often used in Management classes)
- "Hot, Flat and Crowded: Why We Need a Green Revolution—And How It Can Renew America" (2008) by Thomas L. Friedman. (often used in Management classes)
- Guns, Germs, and Steel: The Fates of Human Societies (1997) by Jared Diamond. (often used in Sociology-Anthropology)
- Collapse: How Societies Choose to Fail or Succeed (2005) by Jared Diamond. (often used in Sociology-Anthropology)

Fiction books and films:

- "A Canticle for Leibowitz" (1960) by Walter M. Miller, Jr.
- "Methuselah's Children" (1941) or "Time Enough for Love: The Lives of Lazarus Long" (1973) by Robert A. Heinlein.
- "Angels and Demons" (2000) by Dan Brown. (Film version available too but TOTALLY DIFFERENT FOR OUR ANALYSIS.)
- "My Sister's Keeper" (2004) by Jodi Picoult. (Film version- 2009, New Line Cinema, directed by Nick Cassavetes. The film and the book differ in the ending and in some key characters. The issues are similar, but one of the reflections to think about is the impact of the each of the endings in the message the reader or audience gets from the story.)
- FILM: Gattaca (1998) Columbia Pictures. Directed and written by Andrew Niccol.
- FILM: Blade Runner (1982) Warner Bros. Directed by Ridley Scott. Based on a novel by Philip K. Dick.

**E. Course Outline and Timeframe** (more detailed schedule will be posted on the web as we go along)

WEEK	TOPICS	EXAM
1-6 (Nov. 9- Dec. 18)	I. Introduction and ground rules II. The practice of science A. How scientific information works B. Science and social decision making: Smoking III. The revolution in information and telecommunications technology A. Plenary Lecture 1: Technology and Lifestyle (Wednesday, December 16, 2009) Note: Bonifacio Day, November 30, Monday, is a National Holiday	Oral exam on technology and lifestyle
7-11 (Jan. 4- Feb.5)	IV. Environment and sustainable development A. Environmental issues: Climate change B. Sustainability and development C. Plenary Lecture 2: Environment (Monday, January 11, 2010) V. Development and innovation A. Plenary Lecture 3: Innovation (Friday, January 22, 2010)	Exam on technology, environment and sustainable development

	Note: President's Day, Monday, February 1, is a university holiday	
12-16 (Feb. 8- Mar. 12)	VI. Biotechnology A. Breeding technologies B. Molecular genetics and genetic engineering VII. Origins of life A. Plenary Lecture 4: Life and its origins (Monday, February 15, 2010) VIII. Origin of the universe A. Plenary Lecture 5: Origin of the universe (Wednesday, February 24, 2010)	Exam on biotechnology, origin of life, and origin of the universe; Bonus book/film orals
17-18 (Mar. 15- 26)	IX. Summary and integration of the course X. Final Examination (reverse exemption)	Final oral examination (see Course requirements below)

### F. Course Requirements and Grading

- 1) Class standing will be the average of
  - a) 3 long exams as noted above (may be written or oral or a combination), in percent
  - b) Equivalent to one long exam: total of quizzes, homework, exercises (individual and group), recitation (e.g., Star Science sessions), converted to percent
- 2) Bonus orals (see suggested readings above)
  - a) Equivalent to one of the long exams. The higher of the averages (average with bonus orals of 5 "exams" or average without bonus of 4 "exams") will be used for the class standing.
- 3) Final oral exam: reverse exemption.
  - a) The final exam is only for those with an A, B+, or borderline B/B+ class standing. Lowest final grade possible is a B.
  - b) For the rest of the class, your class standing is the final grade.

### G. Grading System

$$100 \geq A \geq 93 > B+ \geq 87 > B \geq 80 > C+ \geq 74 > C \geq 68 > D \geq 60 > F$$

Qualitatively, or how numbers are assigned to essays, orals, and exercises:

D	Can reiterate the key points from the class material clearly and coherently
C	Understands the facts and key points of the class material and dialogs with it on a personal level; presents it clearly and coherently
B	Understands the class material and analyzes it from various perspectives, including on the personal level; presents the material in a clear, organized, coherent, and creative way
A	Understands the material, analyzes it from various perspectives, offers additional insights; presents the material within a clear, coherent, and integrated framework.

### H. Classroom Policies

#### 1. ATTENDANCE

CUTS. A maximum of nine (9) cuts are allowed. There is no distinction between excused and unexcused cuts.

Excused absences are still considered cuts, but any activity missed (quizzes, etc.) will not be counted against them. Students are excused for only the following reasons: (1) Students who will represent the school in an official activity and present a letter endorsed by the Associate Dean for Academic Affairs; (2) Students who are ill and present a medical certificate attesting to the illness.

- *If you are not present when your name is called, the seat plan is checked, or when the attendance sheet is passed, **you are considered absent.***
2. **CLASSROOM DEMEANOR**  
Keep distractions to a minimum. The basic rule is to give respect, courtesy, and consideration to others.
  3. **ACADEMIC INTEGRITY, TRUST, TRANSPARENCY, AND ACCOUNTABILITY**  
Academic integrity is being proud of one's work and standing by it. When you put down your name on a work, you are attesting your authorship. When you sign your name, you are asserting your commitment to it.

Thus, keep the habit of avoiding behavior that can cast doubt on your work by making sure you document your sources, avoid looking around or communicating except with the instructors during exams and individual activities, and making sure you contribute well to any group activities.

The minimum penalty for dishonest behavior (e.g. cheating, generating false data, plagiarism, etc.) is a grade of zero for the particular activity. Other university rules will also be enforced.

4. **ELECTRONIC DEVICES**  
Cellular phones, music players, game consoles, and all other electronic devices should not be used in class unless explicitly allowed.

### **CONSULTATION HOURS AND OFFICE LOCATION**

Consultation hours are generally by appointment for Dr. Rojas, because her schedule is somewhat irregular (she also teaches at the Ateneo School of Medicine and Public Health, which runs on a different schedule). But please feel free to drop by her office, in case she is around.

Dr. Rojas's office is at Ch-115, the end of the 1<sup>st</sup> Floor Hallway, 2<sup>nd</sup> cubicle from the right. Ms. Loable's office is at Ch-116, at the top of the small flight of stairs at the end of the 1<sup>st</sup> floor hallway of Schmitt Hall.

### **ONLINE CLASS SITES**

We also have a yahoogroups site: [nrojas\\_sci10@yahoogroups.com](mailto:nrojas_sci10@yahoogroups.com). Please sign up for that—write us your full name in your request to join the group, to distinguish your request from those by spammers.

Make it a habit to check the class site at <http://nrojas.wordpress.com/sci-10/> for reminders and schedule concerns (e.g., what happens when classes are suspended). This can also be a venue for your comments and suggestions regarding our class.

Dr. Rojas also has a separate website of book reviews and thoughts on science, biochemistry, medicine, and society at <http://nrojas.multiply.com>, as well as a number of links through her FaceBook account (Nina Rojas). You're welcome to drop by.

### **UPDATES TO THIS SYLLABUS AND MORE**

Additional information and updates will be announced to the class from time to time. □