

HNRS 225

Seminar 3: Science and Technology in New York City

PLAS Category: Natural Science (NS)

This course will help students develop an understanding of scientific work and the tools employed by scientific researchers. The course will do this in two ways: 1) by engaging students in an examination of published scientific research, which will enable an examination of the questions asked and methodologies employed by researchers to address the questions; and 2) by asking that students conduct, write up and present in poster form, a close examination of a scientific or technological problem of their selection. The course focuses on scientific or technological issues relevant to New York City; the implication of such issues, however, extends beyond the city's confines.

Seminar 3, Science and Technology in New York City Syllabus, HMNS 225, Fall 2006, Dr. P.C. Chabora

Meeting times: Mondays and Wednesdays: 3:05 - 4:20 pm

This seminar, Science and Technology in New York, for the fall of 2006, will have the theme of its project centered on the topic of "Feeding NYC." A more descriptive subtitle may be the "The ecological requirements, determinants and costs of providing nourishment to the inhabitants of NYC." Each student is expected to select (after the semester is begun and several discussions have taken place) one specific area concerning the food that New Yorkers consume and the broad ecological implications of the production, tangential costs, selling, preparation, consumption, and waste of that food product. The product of this project will be well-written, substantially documented, ready-to-be-published paper (15-20 pages) and a poster for presentation at the annual Honor's College Science and Technology event. (The poster will be assembled as a joint project of about four students.) Prior to developing the research project, there will be several short "abstracts" dealing with general background materials related to the overall theme. The subjects for these assignments, as well as the instructions for preparation and style, are detailed below.

Required (summer) course readings: (These books are not being ordered via the QC bookstore because you can get inexpensive copies (used or new) via the internet - especially if several students order together to lower the shipping costs.)



JARED DIAMOND

Diamond, Jared. 1997. *Guns, Germs and Steel: The Fate of Human Societies*. W.W. Norton & Company, 480 pp.

How societies develop and are sustained is very much dependent on the ecology of the system. Diamond is concerned with such geographical and ecological determinants as they pertain to humans and develops hypotheses of how societies develop and how the interactions between humans and other species shape their respective genetic constitutions.



Saler, Bernson, Charles A. Zeigler and Charles B. Moore. 1997. *UFO Crash at Roswell: The Genesis of a Modern Myth*. Smithsonian Institution Press, 198 pp.

One item that we are concerned with in this seminar is the idea of what individuals may believe - whether it is true or not. ("...that truth one way or the other has nothing to do with why people believe it.") Saler et al. develop ideas of how we come to believe in those things that we believe. Similarities among the genesis of myths, folklore, and religion using the UFO story are discussed. You may skim Chapter 3.

Note that there is no "W" assigned with this seminar and this is not a writing course. However, it is expected that the term paper will be of the quality expected in a writing course, because after all, this is an Honor's Seminar.

Calendar and syllabus

Aug. 30 - Introduction to the seminar: After an introduction to the seminar, we will begin with a discussion of Saler et al, because you will have read the volume prior to this session. How do we get to know the things we know (or believe that we know)? Does the process of science have hegemony on discovering truth?

Assignment: Write a two page abstract, that is, a concisely worded and well-developed essay, focusing on a point relevant to the discussion of August 30. In our society, we have come to believe certain things, which may be based on fact or perhaps they may be mythical such as "Christopher Columbus arguing for the round Earth," the "UFO Crash at Roswell," or "the legend of John Henry." The idea of this abstract is for you to think about some story, idea, or myth and describe how it has become part of that which we as a society tend to believe. For example, think about the various "food pyramids" that have been created over the past few decades, or the "South Beach Diet," or "Atkin's diet," or the consumption of "oats and oat products." Due Sept. 6.

Abstract format: The two-page abstract will be on standard 8.5" x 11" paper, with 1" margins all around. Use Times (Times New Roman) 12 font, and be sure to use your grammar and spell checker. Use the Chicago Manual of Style Citation Guide (*Google* it) to format citations in the text and References Cited.

Sept. 6 - Submission of Abstract #1. Continued discussion of Saler et al. and abstracts.

Sept. 11 - Discussion of the ecological determinants shaping of human cultural and societal development. Diamond, Jared. 1997. *Guns, Germs and Steel: The Fate of Human Societies*.

Assignment:

Abstract: Write a two page abstract, on the following question relating to the 1968 paper by Garret Hardin, *The Tragedy of the Commons*. In this classic paper, Hardin considers the human behavior and response to resource availability and consumption as well as a consideration of population density and growth. A *pdf* of this paper will be sent to you by email. Be prepared to submit your essay and present your views on Monday, 9/18.

Question: Consider the meaning of "tragedy" as envisioned by the philosopher, A.N. Whitehead, who stated: "The essence of dramatic tragedy is not unhappiness. It resides in the solemnity of the remorseless working of things." Within this context and that of the arguments presented by Diamond in *Guns, Germs and Steel*, develop an essay focusing on the following question: Is it reasonable to assume that human societies and their activities in developing cities, with all their necessary supporting features, can evolve free of the "tragic use of the commons"(ecological impacts) as discussed by Hardin?

You need not research papers other than Hardin's original paper and it is for you to think about this question. However, much has been written over the past 30+ years, both in concert with and in opposition to this view of life. Much of this literature is available in my office and you are welcome to investigate.

Sept. 13 - Development of Diamond's ideas of how geography and ecological conditions affect the development of societies and cultures. Students will be randomly assigned chapters for which they are responsible.

Sept. 18 - Abstract #2 to be submitted. Discussion of "*Tragedy of the Commons*."

Sept. 20 - Development of the ideas for a semester research project on the theme of ecological footprints and more specifically "feeding NYC." During this session and for the following sessions, the computer facility located in the adjacent room is utilized during the meeting session. During these sessions, pertinent reference books and documents will be available.

From this point on, the actual activities will be dependant on the development and progress of the research project.

Sept. 25 - General discussion of the broad areas of research encompassing the topic of feeding NYC.

Sept. 27 - Students will select their individual topics for research. A number of examples of research are available on the www and a collection of references is available in Dr. Chabora's office.

Oct. 4 - Synthesis of the individual topics into themes that will correspond to the criteria established by the Honor's College for the presentation session.

Oct. 10 }
Oct. 11 }
Oct. 16 }
Oct. 18 } Topic development and research. There will be weekly oral presentations to the
Oct. 23 } class as works in progress.
Oct. 25 }
Oct. 30 }

Nov. 1 Assignment: Essay Competition

By this date, each student should have a good handle on their topic and data should have been gathered and synthesized. Thus, we must begin to create a publishable document and presentations on the Feeding NYC components.

This assignment is to be submitted Monday, November 11. During the class session, we will hold a competition to select the best two or three essays that will serve as the basis for developing the introduction to our project. Thus, think in broad terms, but write in the methods and style of the sciences.

This assignment is to write an essay of 3-4 pages, prepared in the usual precise manner and focusing on the introduction to the class project. What I want are very individual essays – not anything written in collaboration with others. Remember, we are not writing a novel, but we want to explain to potential readers what the project is all about. We want an interesting introduction; one that will suck in the reader and make them want to read the total project.

Nov. 6 – The class will be divided into four logical aggregations - which may be the difficult part - each to consider the essays completed by each of the members. From these the best essay and best concepts from each essay will be incorporated and presented for discussion the following session.

Nov. 8 - Essay presentations, evaluation and discussions.

Nov. 13 - Continued project development, data analysis and synthesis based on the prior reviews of the presentations. During this period, all groups will be meeting at Dr. Chabora's office at times other than the scheduled class time. We will decide on meeting times, including weekends.

Nov. 15 - Preparation of the introductory poster format and outline for the term papers.

Nov. 20
Nov. 27
Nov. 29
Dec. 4

} Poster production and term paper writing.

Dec. 6 - Final editing and printing the posters.

Dec. 11 - Review and preparation for the poster and PowerPoint presentations.

Dec. 13 - Wrap-up - pizza?

The December 2002 student presentations of Seminar 3 research projects will take place as scheduled by HC central.

Following the poster presentations, students will complete their manuscripts on Feeding NYC. The quality of these papers will make them worthy of publication. This MS is due December 26, 2006 and will be considered the course final exam.

SYLLABUS

HNRS 225: Science and Technology in New York City

Meeting time: T, Th 1:40-2:55PM

Room: NSB D135

Professor: George R. Hendrey **Office:** NSB E208

Office Hours: Monday & Wednesday 1:30-3:00 pm or by appointment

Telephone: 718-997-3325 **E-mail:** ghendrey@qc.edu

Writing Assistant:

Technical Assistant:

HNRS 225 is a CUNY Honors College seminar course dealing with the broad topic of "Science and Technology in New York City." The theme for the course as presented in autumn 2006 is Global Change and the Megacity. The science in this seminar is a component of the emerging field of global ecology and the discussions and readings are intended to help students see the city from a scientist's and engineer's perspective.

Today, a third of the world's 6 billion people live in cities but in just 25 years from now, two thirds of 8 billion people will be looking for homes in town. The most pressing issue for humanity is how to maintain a habitable yet increasingly urbanized Earth and New York City is a good model of the urbanization process. Science and technology are essential both to understanding how and why the global environment is impacted by human activities, how these impacts feed back on the city, and to guiding our responses to achieve an acceptable quality of life. Can collective human behavior be guided so as to maintain a habitable Earth and a stable global economy? We will examine societies that failed because of environmental abuse to see if there are historical lessons of use today. We will focus on environmental issues associated with development of the megacity, the dependence of the megacity on global environmental resources, and how on-going global climate change may impact New York. The course will encompass thinking about complex systems through analogy, such as between the city and a living organism.

This is a seminar class, readings will be assigned for most of the class sessions and students will be assigned to present the readings and lead the discussion. A term paper of ca. 3,500 words is required. Students will organize into groups and select related topics for their term papers relevant to the course theme.

Course Learning Objectives

In the seminar, students will:

1. Develop and demonstrate an awareness of the messiness and complexity of the progress of scientific knowledge by reading and writing about the intellectual roots of the seminar topic.
2. Practice critical thinking through the evaluation of scientific and technological issues and the public presentation of their research.
3. Learn to search literature on specific science and technology topics and to use the Internet to identify relevant data sources.
4. Understand scientific principles by analyzing one or more problems in detail.

Outcome assessment

The course outcome with respect to the learning objectives will be assessed by evaluating student performance as follows.

Objectives 1 & 2: Student contributions to the discussions of the assigned papers should show improvement over the semester and the instructor will keep a log of the general contribution and performance of students in these discussions.

Objectives 3 & 4: The effort and quality of work in development of the term paper will be evaluated at several steps and the effectiveness of the learning process will be assessed by noting the extent to which improvement is shown in these activities, and in the use of literature reference sources, comparing the term paper proposal to the final report. In addition, if there is a CHC poster session, the information quality and presentation will provide another opportunity for assessment of the class in meeting the stated objectives.

Field Trips: One or more field trips will be arranged. After each field trip students will need to hand in a short "thought paper" of at least one full page reflecting on the experience. The purpose of a field trip is to experience

key elements of the city's infrastructure, and learn about essential functions that keep the city habitable. Bring a camera, a note pad and an open attitude and we'll have a great day.

Term Paper:

This is a research paper to be based on a number of different published sources, most of which should be primary sources. The topic may be selected by the student but I will suggest a number of topics to the class as we go along.

Term paper proposals

- Term paper topics need prior approval and must fit the theme of the course.
- Students will peer-review each others' papers at two or three steps in the process.
- All preliminary drafts are to be double-spaced.

The final submission format

- All reports and papers must be submitted both as a paper copy **and** as an MS Word file on CD.
- Font is Times New Roman 12 pt
- Spacing is 1.5 lines; indent the first line of paragraphs 5 spaces, 6 pt spacing between paragraphs.
- Page margins 1.5 inches all around
- 12 pages (1.5 line spacing, ~3,500 words) excluding bibliography and figures.
- Page header: starting with the second page, each page will have a header with the following: Chapter number, students last name.
- All figures must be in .jpg format readable in both Mac and PC systems.
- Cut-and-paste of tables and figures from the Internet or other source materials is **discouraged**.

Oral Presentation: Students will present an oral report on their papers as the final exam. Each presentation will be 8 minutes total (5 minutes presentation plus 3 minutes Q & A). This is an exercise in being concise and well organized. Use of visual aids (e.g., MS PowerPoint) is encouraged.

Poster: If there is to be a CHC poster display, the class will prepare one or more posters for the poster session based on overall topic for term papers.

Class participation & homework: Each student is expected to contribute to discussion of the readings due for class meetings.

Event participation is required: field trips, required CHC colloquia, poster session.

Class Format

Readings will be assigned for each week and students will be assigned to lead discussion of the paper. Part of some classes will be "writing labs" to provide assistance in technical writing, formatting papers, use of PowerPoint and poster preparation.

Class Hours

Class usually meets Tuesday and Thursday 1:40 – 2:55, with exceptions as per the Syllabus.

Class participation

Students are expected to attend all classes and field trips. A student unable to attend a class due to illness or other unavoidable factor should notify Prof. Hendrey in advance. Come prepared to participate in discussion and/or ask questions to clarify or expand on the writing projects, to contribute to the team efforts and to be inventive. Students are expected to ask intelligent and informed questions of guest speakers. This will be viewed as part of class participation. Although each student will prepare a report, the reports are to be integrated by teams, and the team reports are to be integrated into the whole class project. Attendance at the Honors College Poster session and field trips are required.

Grading

| | | |
|--|-----|-----|
| Class Participation | 20% | |
| Preliminary Report (by mid-term) | | 15% |
| Evaluation of a peer's paper | 5% | |
| Outline | 5% | |
| Integration with other student's term papers | 5% | |

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| Final reports | | 45% |
| Evaluation of a peer's term paper | 5% | |
| Oral Presentation (Oral Final) | 10% | |
| Technical content and writing | 25% | |
| Integration into final report | 5% | |
| Class Project Report (how well it all fits together) | | 10% |
| Integration, summaries | 5% | |
| "publication quality" | 5% | |
| Contribution to poster | | 10% |

Summer Reading Assignment:

- Trefil, James R. 1998. *A Scientist in the City*. Doubleday, New York 266 pp.

Suggested Reading

- Diamond, Jared. 2005. *Collapse: How Societies Choose to Fail or Succeed*. Viking Books. 592 pp.

Other Interesting (not required) material

- Fagan, Brian. 2004. *The Long Summer: How Climate Changed Civilization*. Basic Books, Persus. 284 pp.
- Diamond, Jared. 1997. *Guns, Germs and Steel: The Fates of Human Societies*. W.W. Norton & Co. New York. 480 pp.
- Intergovernmental Panel on Climate Change. 2001. *Climate Change 2001: The Scientific Basis*.
- Herson, Lawrence J.R. and John M. Bolland. 1990. *The Urban Web: Politics, Policy, and Theory*. Nelson-Hall. 512 pp.
- National Research Council. 2003. *Cities Transformed: Demographic Change and Its Implications in the Developing World*. Panel on Urban Population Dynamics. M.R. Montgomery, R. Stren, B. Cohen, and H.E. Reed, eds., Committee on Population, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press. 529 pp.

The Internet and the world's relevant literature: (Your job is to research your topic; here are a few topic suggestions)

- City as an organism: <http://www.stalberg.net/cespub2.htm>
- Dystopia: <http://www.lcc.gatech.edu/~broglia/1101/davis.html>
- NYC webpage for on-line services: <http://www.nyc.gov/html/doitt/html/home/home.shtml>
- Thomas E. Gradel (Yale) Industrial Ecology and the Megacity
<http://www.nae.edu/nae/bridgecom.nsf/BridgePrintView/NAEW-4NHMH8?OpenDocument>
- Battery Park <http://www.bpcparks.org/bpcp/parks/parks.php>
- Hudson River Action Plan <http://www.dec.state.ny.us/website/hudson/actionagenda2005.pdf>
- The NY Grid system: http://www.personal.psu.edu/users/r/s/rsr158/Rationalizing_the_Landscape.pdf
- NYC Mayor's energy plan: http://www.nyc.gov/html/om/pdf/energy_task_force.pdf

| Date | Objective | OCA ¹ | Topic | Assigned Reading |
|-------|-----------|------------------|---|---|
| July | 1 | | Required reading | Summer Reading: J.Trefil, <i>A scientist in the City</i> (available at Amazon.com, Borders, Barnes & Noble) |
| 08/31 | | | Introductions and overview (Discuss concepts for an integrated set of term papers) | Writing and tech support assistants, review of on-line library support, poster session |
| 09/5 | 1, 4 | | New York: A global megacity | Discuss <i>A Scientist in the City</i> |
| 09/7 | 1, 3 | | Ecological determinism | Diamond: Why did human history |

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|-------|------------|-----|---|--|
| | | | | unfold differently on different continents for the last 13,000 years? |
| 09/12 | 1, 4 | | Limits to growth -1 | Meadows et al: Limits to Growth |
| 09/14 | 1, 4 | | Limits to growth -2: Resource depletion | Diamond, Chapter 3: The Last People Alive. |
| 09/19 | 1, 4 | | Limits to growth -3: Climate Change | Diamond, Chapter 8: Norse Greenland's End |
| 09/21 | 1, 4 | | Limits to growth -4: An explanation | G. Harden: Tragedy of the Commons |
| 09/26 | 1, 4 | | Choices with limited resources | J. Diamond, Chapter 11: Managing resources for sustainability: Hispaniola |
| 09/28 | 1, 4 | | Evaluating ecological impacts of societies | Sanderson et al: The human footprint and the last of the wild |
| 10/3 | 1, 4 | | Life of a city: why do cities exist? NYC growth | Trefil: The Birth of Cities |
| 10/5 | 1, 4 | | Critical urban infrastructure: water and waste | J. Trefil: Chapters 2 & 3 |
| 10/10 | | | NO CLASS, classes follow Monday Schedule | |
| 10/12 | 1, 4 | | NYC as an organism: Is a city alive? | Graedel: Industrial Ecology and the Ecocity |
| 10/17 | 1, 2, 3, 4 | yes | Discuss term paper topic selections (Submit term paper proposals for peer review) | Term paper proposals should be about 900 words, include title, purpose, thesis statement, literature sources |
| 10/19 | 1, 2, 3, 4 | | Urban Ecology, discussion (Hand in reviewed proposals) | Golley: <i>Urban Ecosystems and the Twenty-First Century</i> |
| 10/24 | 1, 4 | | Energy for the city: what powers the City? (Discuss term paper proposals) | TBD |
| 10/26 | 1, 4 | | SPEAKER From Con Ed Power Management Center | Art Kressner (ConEd) |
| 10/31 | 1, 4 | | NYC Future energy needs and alternative energy sources | NYC Energy Policy Task Force: New York City Energy Policy: An Electricity Resource Roadmap (Excerpts) |
| 11/2 | 1, 4 | | Determining an ecological footprint | Venetoulis et al: Ecological Footprint of Nations |
| 11/7 | 1, 2, 3, 4 | | Ecological footprint of NYC (Turn in Term paper first draft for peer review) | |
| 11/9 | 1 | yes | FIELD TRIP (Return peer reviewed term paper drafts) | Covanta Waste-to-energy plant |
| 11/14 | 1, 4 | | Global climate change drivers and impacts. (Discuss term paper drafts) | IPCC: Climate Change 2007: The Physical Science Basis (excerpts) |
| 11/16 | 1, 4 | | Climate change and NYC | TBD |
| 11/21 | 1, 4 | | Evaluating sea level change impacts on NYC | TBD |
| 11/23 | 1, 4 | | Has the human condition been wrecked by science and technology (Discuss integration of term papers) | J. Diamond: <i>The worst decision ever made</i> |
| 11/28 | 1, 2, 3, 4 | | Work on poster | |
| 11/30 | | | THANKSGIVING DAY | |
| 12/5 | 1, 4 | | Coping with macro problems | J. Diamond, Chapter 16: The world as a Polder |

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|------|---------|-----|---|-------------------------------------|
| ?? | 2, 3, 4 | yes | Poster Session | |
| 12/7 | 1, 4 | | Why do some societies make disastrous decisions | J. Diamond: Chapter 14 |
| 12/? | 2 | yes | Final: Oral term paper presentations; Class evaluations <i>(Submit completed term paper)</i> | Peer reviewing of oral presentation |

Honors College, CUNY
Seminar 3: Science & Technology
Queens College, HNRS 225, Fall 2007

Professor: Dr. Alberto Cordero
PH 350L
Office Hour: Mo & We 12:30 – 1:30
Phone (718) 997-5270
Email: alberto.cordero@qc.cuny.edu

Lectures: Mo–We 1:40 PM

SEMINAR DESCRIPTION:

This seminar explores a style of thought of growing contemporary impact: scientific thought. Its intellectual and material products, discernible all around us, spring from a gradually learned way of pursuing knowledge. In this seminar we will discuss such topics as the character of contemporary science, its ways of approaching and understanding various domains of inquiry, issues about the scope, limits and development of scientific beliefs, and also issues about science and values. No special scientific knowledge will be assumed, only basic high-school science and very basic (undergraduate) logic and philosophy.

We will begin with a case study from real science, the discovery of the structure of the DNA molecule, which will provide background for subsequent discussions. The bulk of the seminar will be devoted to reading and analyzing sets of accessible essays representative of the topics chosen for this seminar, which have been selected to give a solid, dialectical exposure to the relevant issues.

MAIN OBJECTIVES:

1. Promote awareness of the complexity of scientific practice and the scope and limits of scientific knowledge. To these ends the seminar will include readings and discussions about the intellectual and practical roots of scientific practice.
2. Practice critical thinking through the evaluation of issues in current science and scientific technology and the philosophy of science.
3. Understand and practice scientific thinking by analyzing one issue in detail and reporting on your work in a scientific style.
4. Learn to search literature (including internet resources) on specific science and philosophy topics.

REQUIRED TEXTBOOKS

[K]: Klemke, E. D. et al.: Introductory Readings in the Philosophy of Science. (Prometheus Books).

[W]: Watson, James: The Double Helix.

You should also get a handy, short dictionary of philosophy, for example The Oxford Dictionary of Philosophy by Simon Blackburn (Oxford UP, ISBN: 0-19-283134-8).

COURSE PROGRAM

A. LECTURES: The topics below are listed in chronological order. Students are expected to do the required readings for each topic before class.

1. SCIENCE AS PRACTICED BY SCIENTISTS: The complexity of scientific practice as displayed in the race to discover the structure of the DNA molecule.

Required reading:

[W]: Watson, James: The Double Helix

2. SOME INFLUENTIAL VIEWS ON SCIENCE: Ideas on the nature of science.

Required readings:

[K1]: Popper, K., "Science: Conjectures and Refutations"

[K2]: Ziman, J., "What is Science?"

[K3]: Feyerabend, P., "How to Defend Society against Science"

3. SCIENCE AND A CONTEMPORARY RATIONAL BELIEF: Science as controlled modern skepticism. Rational belief in contemporary science. Science and ideology.

Required readings:

[K4]: Thagard, P., "Why Astrology Is a Pseudo-Science"

[K5]: Kitcher, P., "Believing Where We Cannot Prove"

[K7]: Kuhn, T.S., "The Natural and Human Sciences"

4. CREDIBLE SCIENTIFIC NARRATIVES AND THEIR ASSESSMENT: Hypotheses and theories. Justification of ideas in science. Ideas about unobservable reality and their scientific corroboration.

Required readings:

[K21]: Toulmin, S., "Do Sub-Microscopic Entities Exist?"

[K28]: Frank, P.G., "The Variety of Reasons for the Acceptance of Scientific Theories"

[K24]: Quine, W.V. & J.S. Ullian, "Hypotheses"

[K25]: Giere, R. "Justifying Scientific Theories"

5. SCIENCE AND VALUES: Some key topics on the scope and limits of value-neutrality in contemporary science and philosophy of science.

Required readings:

[K26]: Kuhn, T.S., "Objectivity, Value Judgment, and Theory Choice"

[K31]: McMullin, E., "Values in Science"

[K33]: Giere, R., "The Feminist Question in the Philosophy of Science"

B. INVESTIGATIVE REPORT: This part of the seminar is designed to encourage the practice critical thinking through the evaluation of a scientific or technological issue of current relevance and the public presentation of research. It will involve searching literature (including the internet) in order to identify relevant information on the issue at hand.

For purposes of this activity the class will be partitioned into research teams. Each seminar team will produce (a) an investigative report on a specific topic, about 8 pages long; and (b) a detailed critical commentary of another team's report (first-draft), about 4 pages long; the comments will be aimed at improving the report in progress. Final reports will be presented and discussed in class. Comments to first drafts will be discussed between the appointed groups (with occasional intervention of the instructor). Each team will receive a collective grade for its performance in this Part B. For each of its two assigned performances (as report writers and as report commentators) each group will get a "collective grade" (i.e. all its members will get the same number of points). No two teams may work on the same topic.

The writing style should approach that of papers published in good scientific journals - sharply focused on the points being made, carefully reasoned argumentation, concise and clear writing throughout.

Deadlines: Topic selection should take place by 3rd week. Class presentations must be done by end of November.

Prospective topics will be made available at the beginning of 2nd week. Probable topics include analysis and evaluation of controversial ideas from "alternative science" (for example on the origin of humans), recent Darwinian psychology, and recent critiques of the medical industry; another topic could be the presence and function of science in NYC

C. COMMON ACTIVITIES ARRANGED BY HC FOR ALL CURRENT SECTIONS OF SEMINAR 3: As arranged by Honors College.

GRADING

1. Individual class participation (20 points).
2. Group investigative activity (30 pts, split as follows: 20 pts for group's own report, 10 pts for commentary of 2nd group's report).
3. Written Examinations (50 pts); there will be two exams, worth 25 points each.

Tentative date for Exam 1: Oct 1.

Date for Exam 2 (final): As scheduled by QC.

All work for this course must be completed on time; delays, if accepted, will carry a penalty worth 15% of the maximum grade for the item.

Macaulay Honors College at Queens College, CUNY

SEMINAR 3: Science and Technology in NYC (HON 225), Fall 2008

Class Meetings: Tuesday, Thursday 3:05-4:20 PM, Room: T3-12

Professor: Gillian Stewart

School of Earth and Environmental Sciences

Office: E-218, New Science Building

Office Hours: Tues, Thursday 2-3PM

Telephone: 718-997-3104

Email: gstewart@qc.cuny.edu (best method to reach me)

Tech Fellow: Ingrid Montealegre, foobar793@yahoo.com

General Learning Goals for all sections of HNRS-225

In the seminar, students will:

1. Develop and demonstrate an awareness of the messiness and complexity of the progress of scientific knowledge by reading and writing about the intellectual roots of the seminar topic.
2. Practice critical thinking through the evaluation of scientific and technological issues and the public presentation of their research.
3. Learn to search literature on specific science and technology topics and to use the Internet to identify relevant data sources.
4. Understand scientific principles by analyzing one or more problems in detail.

Seminar Topic:

This seminar is built around the central theme of *Marine and Aquatic Systems of New York*. It will introduce students to the geology, physics, chemistry and biology of the ocean and examine a set of interconnected yet distinct threats to New York's marine and aquatic habitats. These include (1) Coastal Development, (2) Overfishing, (3) Sea Level Rise, and (4) Shutdown of Ocean Circulation due to Climate Change.

Oceanography is a rich and complex subject because it spans physical, chemical, biological, geological, atmospheric, terrestrial, engineering, economic, political, social, and cultural dimensions, all interweaved into global scale problems of immediate implications for the health of the planet and for the stability of human societies. Although this seminar will emphasize the global nature of these problems, we will repeatedly encounter and examine important implications for NYC.

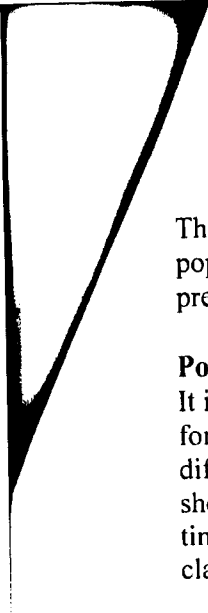
Readings:

There is no formal textbook. However the following book is required reading for this seminar:

Endangered Oceans: Opposing Viewpoints. Louise I. Gerdes, ed.

Greenhaven Press, New York 2004

ISBN: 0-7377-2274-6 (this is an old edition, the new one comes out November 2008)



There will be additional readings assigned each week, from peer-reviewed scientific journals, the popular press, newspapers, the internet, etc. Typically, students will take turns giving powerpoint presentations about the readings followed by class discussion.

Policy on Student Responsibility for Accessing Materials Online:

It is your responsibility to successfully access required materials online so that they are available for you to read or use before class. Because there can always be unexpected technological difficulties with accessing campus library websites or other resources from off-campus, you should download readings for class several days before you need them. This will allow extra time for any technological problems. Inability to access electronic materials the evening before class is not a good excuse for not completing the required reading assignments.

If you are encountering difficulties with accessing websites, and you believe the problem is an incorrect URL / web address, then you should contact the instructor. There is a possibility that the website has been taken down, and the instructor will send out a new URL to the class.

If you are encountering difficulties logging-in to a CUNY website or library resource, then you should contact the appropriate resources: the OCT Help Desk on campus, the Instructional Technology Fellow for this class, the Queens College library, etc. They can help you learn how to access the CUNY library resources from your laptop. Sometimes it will be easier to access readings from campus and save them onto a USB flash drive (memory stick) to read at home.

Student Research Projects:

The culmination of the seminar is the exhibition of student scientific posters that will take place in early December at the CUNY Graduate Center.

During the semester each student will participate in a research project to be carried out in groups. You will spend a great deal of time and effort selecting and researching your project, collecting and analyzing data, searching the literature, thinking about your results, interpreting them, and finally presenting them in poster format. This will be the most substantive and hopefully rewarding activity you will engage in during this seminar. It also carries the greatest weight towards your final grade.

Project reports are due Tuesday, 12/16/2008. Project assessment and project reports are an essential part of your evaluation and final grade. Although I am requesting group reports, it is expected that each student will participate in the writing of each group report.

In a closing statement the report must state VERY CLEARLY what each student's contribution to the project was. For example which data the student collected in the lab or obtained from other sources, how he/she analyzed them, how he/she interpreted them, what ideas he/she contributed, how he/she assisted with poster preparation, etc. You will get a handout with more information about the project as the semester begins.

**Homework:**

There will be homework assigned every night. Sometimes the homework will consist only of reading, while other times you will be asked to write something and turn it in for a grade.

Student Evaluation and Grades:

There are no exams in this seminar. The goal is to stimulate and foster active participation and therefore students will be judged by the level and quality of their participation. Seminar attendance is mandatory and all assignments must be turned in on time. Steady progress toward research projects must be maintained throughout the semester. Successful completion of research projects and poster presentation is of critical importance. This will require sustained effort and diligence on your part.

Very simply, if you put in the necessary effort, complete required assignments and actively pursue and complete your research project, you can expect to excel in this class!

Grading:

Participation: 20%

Homework (Pass, no Pass): 20%

Classroom Presentation: 10%

Group Project, Poster, Report: 50%

Class Participation Policy:

Your class participation grade will be determined based on your attendance and active participation in class throughout the semester. Participating in discussions, answering questions, reading assigned texts before class, and participating during in-class activities are all good ways to show "active participation." Frequent talking, however, must be balanced with attentive listening. Please be aware of the space that you take up in the class and try to provide an environment that is welcoming of all voices. For those students who find it difficult to speak up in class, do come and see me.

Being considerate of your fellow students in the classroom is also an important part of your "class participation" grade. You can do this by not causing a distraction for your fellow classmates -- you can remember to turn off your cell phone before class, arrive on time for class, avoid side conversation or noise during class, etc. A good learning environment is also one in which everyone feels welcome and comfortable; so, please be respectful of the diversity of backgrounds, beliefs, and lifestyles of the students in our class. Remember that there are CUNY/Queens College policies that can become applicable if there is an excessive number of lateness or absences during the semester.

Academic Integrity Policy:

The instructor will adhere to Queens College and CUNY policies on academic integrity. Students who cheat on quizzes/exams or who plagiarize material for papers (submitting someone else's work, failing to properly cite sources, or copy/paste information from the Internet) will be reported to the Office of the Vice President for Student Affairs and will fail (0%) the quiz, project, or paper. The Vice President's office may pursue additional penalties beyond those affecting the grade in the course.

Students with Disabilities:

After registering with the Office of Special Services for Students with Disabilities (OSS), please feel free to make an appointment with the course instructor to discuss any academic accommodations you may need. It is best if this is done at the beginning of the semester. If you need academic accommodations and are not registered with the OSS, please contact them in person at 171 Kiely Hall or by telephone at 718-997-5870.

Students with Other Concerns:

Students with academic or personal concerns beyond those related to this course are encouraged to contact their academic advisor for the Honors College at Queens College.

HON-225 Honors College Science & Technology in NYC Seminar-3

Fall 2008 Schedule of classes

(Schedule subject to change. Changes will be announced in class and posted on Blackboard)

Date

| | |
|--|--|
| Aug 28 (Th) | Introduction and General Overview |
| Sep 2 (T) | Discussion of Environmental Defense Fund, 2005 – example of article presentation. |
| Sep 4 (Th) | Introduction to Scientific Tools: Datasets and Journals HW: Find 3 peer-reviewed references on NYC water masses |
| Monday, September 8 – Maccaulay Honors College Event, 6:30 pm (choose 1). | |
| Sep 9 (T) | Introduction to Oceans, Oceanography, Science as a Career HW: Find location of sampling from 3 datasets |
| Sep 11 (Th) | Ocean Geology HW: Graph surface temp vs. bottom dissolved oxygen for 3 sets |
| Sep 16 (T) | Ocean Physics HW: Graph yearly average surface temps for 3 sets |
| Tuesday, September 16 – Maccaulay Honors College Event, 6:30 pm (choose 1). | |
| Sep 18 (Th) | Ocean Chemistry HW Due: Read Doney, 2006 on Ocean Acidification |
| Sep 23 (T) | Ocean Biology |

Wednesday, September 24 – Maccaulay Honors College Event, 6:30 pm (choose 1).

Sep 25 (Th) **10 Minute Presentations on NYC Water Masses**
Oct 2 (Th) **10 Minute Presentations on NYC Water Masses**

Thursday, October 2 – Maccaulay Honors College Event, 6:30 pm (choose 1).

Sunday, October 5 – Maccaulay Honors College Event, 6:30 pm (choose 1).

Oct 7 (T) **10 Minute Presentations on NYC Water Masses**

Oct 16 (Th) Discussion of student projects – form groups
Climate change indications
Intro to Opposing Viewpoints, Ocean Threats

Oct 21 (T) Chapter 1: Viewpoints 1+2, Discussion on Resources
HW Due: Develop a Hypothesis and Objectives

Oct 23 (Th) Group 1 presents paper: Halpern et al. 2008

Oct 28 (T) Chapter 1: Viewpoints 3+4, Discussion on Fisheries
HW Due: Read Ch. 3 and argue for best fisheries protection

Oct 30 (Th) Group 2 presents paper: Pauly et al. 2003

Nov 4 (T) Chapter 1: Viewpoints 5+6, Discussion on Sea Level
HW Due: Develop a Hypothesis and Objectives

Nov 6 (Th) Group 3 presents paper: Cabanes et al. 2001

Nov 11 (T) Chapter 2: Viewpoints 3+4, Ocean Fertilization
HW Due: Find one peer-reviewed paper on Fe fertilization and
summarize the main conclusion and evidence in 1-2 sentences.
Annotate the most important figure.

Nov 13 (Th) Group 4 presents paper: Kinticsh, 2007

Nov 18 (T) Discuss Group Projects: Datasets, Questions, References
HW Due: Rough draft of abstract, background, methods for poster

Nov 20 (Th) Discuss Group Projects: Figures, Interpretation, Layout
HW Due: Rough draft of results and layout due

Nov 25(T) Discuss Projects (Statistical help?)
HW Due: Posters should be ready to print by the end of today!

Dec 2 (T) Posters Due (No class, meet at Graduate Center)
Tuesday, December 2 – Maccaulay Honors College Poster Presentation Event, 5-8 pm, CUNY Graduate Center (mandatory).

Dec 4 (Th) Discuss poster session
Read debate on abrupt climate change (TBD)
HW Due: Do you think it could happen and why or why not?

Dec 9 (T) Group 5 presents paper: Gagosian, 2003

Dec 11 (Th) Watch “The Day After Tomorrow”
HW Read: Lowe et al., 2006

Dec 16 (T) Finish Movie, Discuss Course, Papers due.

Dec 17 - 23 Final Exam Week. No exam scheduled. Each group must submit a written report describing their research projects, their activities and results.