

**HTS 3021 Women in Science and Engineering, Summer 2009**  
**MTWR 1:20-2:10 pm OCE 304**

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“One of the most effective channels for eradicating poverty, creating wealth and enhancing competitiveness is through the acquisition, adaptation and application of relevant technologies.”

- Secretary-General Ban Ki-moon, 2007

Science and Technology have been pillars of the modern world since most living persons can remember. Modern science is so significant to our existence, and scientific methodology to how we understand the world, that very few people have ever questioned some basic presuppositions about the discipline. Humanity is so confident in Science and Technology that we use them to determine a nation's value, a person's status, and institution's global worth. Historians, sociologists, and scientists have gone around again and again discussing the norms, methods, and practices of science; as well as the role scientific invention has played in the shaping of social structures throughout the world. Science as a concept, a philosophy, a discipline, and an institution is one of the most powerful factors affecting human behavior since the reformation and (as some would say) the fall of centralized religion.

The purpose of this course is to explore the bi-directional relationship between science and technology on the one hand, and women of diverse backgrounds on the other. Among the questions to be discussed are: Does it matter who are the practitioners of science and technology? If it does matter, how and in what ways does it matter? What are the goals and expectations for women in science and engineering? Is attention to gender issues in science and engineering still relevant in 2009? How does science and technology contribute to our understandings and constructions of gender? What are the historical and socio-cultural factors that impact the participation of women and men in science and technology? Our exploration will be based on material from various literatures—sociology, science technology studies, feminism, social studies of science, etc.

### **Text and Sources:**

#### ***Required***

Wyer, Mary et al., editors (2009). Women, Science and Technology (2<sup>nd</sup> edition). London: Routledge  
Kournay, Janet A. (2002). The Gender of Science. Upper Saddle River, NJ: Prentice-Hall  
Etkowitz, Henry et al (2000). Athena Unbound: The Advancement of Women in Science and Technology.  
Cambridge: Cambridge University Press

#### ***Recommended***

Lederman, Muriel and Ingrid Bartsch (2001). The Gender and Science Reader. London: Routledge  
Paula Dubeck and Dana Dunn, editor, (2006) Workplace/Women's Place (3<sup>rd</sup> edition), Los Angeles, Ca: Roxbury Publishing Co  
Londa Schiebinger (2008). Gendered Innovations in Science and Engineering. Stanford, CA: Stanford University Press.  
Sharon Bertsch McGrayne (1998), Nobel Prize Women in Science: Their Lives, Struggles, and Momentous Discoveries, Second Edition

Other required readings are available online or will be provided prior to the applicable class session  
Assignment rubrics and guidelines will be provided via email/in class

## Format:

The course will be conducted as a seminar (although there will be brief lectures to establish a common universe of discourse). Participation constitutes an important component of the grade; therefore, students are expected to be prepared to discuss the material assigned for each class meeting.

Class attendance is a prerequisite to—not the same thing as—participation.

## Requirements:

Students are expected to play three roles each week: participant, creator and researcher.

### Participant:

- **Participate fully** in the class through presence, reading, reflection and weekly assignments. Everyone in the class has a role in creating a learning community; thus, you are researchers, decision makers, and creators as you participate in the class. This is described more fully in the following list of requirements. *Students should post 1 –critical question for discussion (per reading) via email to T-square no later than 11AM.* Note: If you have to miss a class session due to unavoidable conflict, please take initiative to notify the instructor in advance and make an appointment and discuss the readings and assignments you have missed with the instructor.

### Creator:

- **Discussion Leader:** Each student will be responsible for leading the class discussion at least twice during the semester. On the date students sign-up to lead the class discussion they are also responsible for constructing a **1-2 page summary of the reading**. Post summaries to T-square by 5PM one *day before* the reading is scheduled to be discussed.
- **Respondent:** Each student will be responsible for being the leading respondent for two class session/topic.
- **Presenter:** Each student will give two presentations on women in science and engineering.
  1. A brief 2-3 minute presentation covering a current issue or story regarding women in science and engineering (i.e. a woman in science and engineering who did not get tenure, the low enrollment of women taking science classes in African schools, etc.). Your presentation should provide a summary of the story, identify significant parties, highlight what is the gender related issue at stake, your propose solution. Students should use the course readings to help shape their presentation and cite relevant sources where necessary. **Deadline June 8, 2009.**
  2. A 5-10 minute presentation introducing the class to your term paper. Your presentation should cover your paper introduction, your thesis, your key points, review of relevant literature, significant facts/statistics, and concluding thoughts and remarks. It is not, however, a full synopsis of your term paper. **Deadline July 6, 2009.**

### Researcher:

- **Read all assignments with care**, reflecting on what the author attempts to communicate, what is revealed about women in science and technology, and the arguments of the assigned chapter/excerpt. Highlight key terms, concepts, or examples provided. *Students should post 1 –critical question for discussion (per reading) via email to T-square no later than 11AM*
- **Critical Reflection Paper- (5-8 pgs)** Select one of the topics from the course calendar. Write a critical paper incorporating your critique of at least 2 of the assigned readings from that section. Critiques are not the same as summaries. The critique should move beyond summarizing the author's key points. It should identify the strength and weaknesses of the author's arguments (supported with examples from the text). Counter arguments should be offered where applicable. Further, a connection between the larger topic and the particular article should be made clear and explicit. **Due June 23 , 2009**

- **Term Paper** - Create a 10-15 pg. term paper. Term papers are well-written and well-documented single authored research papers that expand on any aspect of topics addressed throughout the term. The paper should include all elements outlined under “presentation”. In addition, the paper should have original arguments and a well-supported thesis. **Students must provide a prospectus of their term paper to the instructor by June 8.** The prospectus should include a 1-page summary of the proposed topic and an initial annotated bibliography (citing at least 3 primary and 3 secondary sources).

***Final Term Paper is due no later than 4PM on July 30, 2009***

Note: All written assignments should be 12-pt font, double-space, and 1-inch margins. When quoting a source, citations are expected (footnote or endnote). For term papers and critical reflection papers a correctly structured bibliography is expected.

**Grading/Credit:**

50% class participation and attendance  
    20% -Class engagement/questions  
    10% -Discussion Leader  
    20% -Critical Reflection Paper  
10% Presentations  
40% Term Paper

**COURSE CALENDAR (any changes will be communicated via e-mail)**

**May 11 INTRODUCTION/COURSE OVERVIEW**

**May 12: ESTABLISHING A COMMON UNIVERSE OF DISCOURSE**

Merton, Robert K. (1973). "The Normative Structure of Science," in Robert K. Merton, The Sociology of Science, Chicago: University of Chicago Press: 267-278.

**May 13: ESTABLISHING A COMMON UNIVERSE OF DISCOURSE (con't)**

Keller, Evelyn Fox (1991). "The Wo/Man scientist: issues of sex and gender in the pursuit of science," in Harriet Zuckerman et. Al., editors, The Outer Circle: Women in the Scientific Community, New Haven, CT: Yale University Press, ch. 10 (pp.227-237).

**May 14: PARTICIPATION IN SCIENCE**

**The Gender of Science (2002), by Janet A. Kournay, Upper Saddle River, NJ: Prentice Hall**

Gornick, Vivian "Women in Science: Half In, Half Out," pp. 39-59

**May 18 Gender of Science (2002), by Janet A. Kournay**

Angier, Natalie, "Women Join the Ranks of Science but Remain Invisible at the Top" pp. 75-78.

Goldberg, Phyllis, "Creeping Toward Inclusivity in Science," pp. 79-85.

Harding, Sandra "Women of Third World Descent in the Sciences," pp. 34-39

**May 19 Pearson, Jr., Willie (1985). "On being black, female, and scientist," in Black scientists, white society, and colorless science: a study of universalism in American science.**

Millwood, NY: Associated Faculty Press, Inc., pp. 137-161.

**May 20 Quintana-Baker, Maricel (2002). "A Profile of Mexican American, Puerto Rican, and Other Hispanic STEM Doctorates: 1983-1997," Journal of Women and Minorities in Science and Engineering, vol. 8, pp. 99-121. Available on-line.**

**May 21: No Class**

**May 25: Memorial Day (official school holiday)**

**May 26 The Gender of Science (2002), by Janet A. Kournay**

Schiebinger, Londa, "Women in the Origins of Modern Science," pp. 8-33

**May 27 The Gender of Science (2002), by Janet A. Kournay**

Keller, Evelyn Fox "The Anomaly of a Woman in Physics," pp. 66-74.

**Women, Science and Technology 2<sup>nd</sup> edition (2009), edited by Mary Wyer et al., New York & London: Routledge**

Sands, Aimee "Never meant to survive", pp. 31-39.

**May 28 Leggon, Cheryl B. (2006), "Women in Science: Racial and Ethnic Differences and the Differences They Make," Journal of Technology Transfer, vol. 31, pp.325-333.**

[Available On-line (Springerlink)]

**June 1: GENDER AND PARADIGMS OF SCIENCE**

**Women, Science and Technology 2<sup>nd</sup> edition (2009), edited by Mary Wyer et al., New York & London: Routledge.**

Keller, Evelyn Fox , "Gender and Science: an update" pp. 245-255.

**June 2: Women, Science and Technology 1<sup>st</sup> edition (2001), edited by Mary Wyer et al.**

Longino, Helen E. (2001). "Can there be a feminist science?" pp. 216-223.

[posted on T-square]

**June 3 Women, Science and Technology 2<sup>nd</sup> (2009), edited by Mary Wyer et al.**

Barbercheck, Mary . "Science, Sex, and Stereotypical Images in Scientific Advertising," pp. 118-132.

**June 4: RESEARCH DAY**

**June 8: PRESENTATIONS ON CURRENT ISSUES: WOMEN IN SCIENCE AND ENGINEERING**

Short oral presentation on current issues/story of women in science and engineering

Sign up for individual oral presentations

**TERM PAPER PROSPECTUS DUE**

**June 9: EDUCATION AND SOCIALIZATION**

Women, Science and Technology 2<sup>nd</sup> edition, edited by Mary Wyer et al., New York & London: Routledge, 2009.

Bleier, Ruth. "Sociobiology, biological determinism, and human behavior," pp. 175-193.

June 10: Kelly, Rita Mae (1997). "Gender, culture, and socialization," in Dana Dunn, editor, Workplace/Women's Place, Los Angeles, Ca: Roxbury Publishing Co., pp. 19-31.

June 11: Orenstein, Peggy (1997). "Shortchanging girls: gender socialization in schools," in Dana Dunn, editor, Workplace/Women's Place, Los Angeles, Ca: Roxbury Publishing Co., pp. 43-52.

**June 15: NOBEL WINNERS, REWARDS, AND PRODUCTIVITY**

Nobel Prize Women in Science: Their Lives, Struggles, and Momentous Discoveries, Sharon Bertsch McGrayne, Washington D.C: Joseph Henry Press, 2002

"Barbara McClintock," pp. 144-174

June 16: Nobel Prize Women in Science: Their Lives, Struggles, and Momentous Discoveries, Sharon Bertsch McGrayne, Washington D.C: Joseph Henry Press, 2002

"Christiane Nusslein-Volhard," pp. 378-407

June 17: Mary Frank Fox and Sushanta Mohapatra (2007), "Social-Organizational Characteristics of Work and Publication Productivity among Academic Scientists in Doctoral-Granting Departments," The Journal of Higher Education, Vol. 78, pp. 542-571 [**Available On-line**]

June 18: Cynthia Cockburn, "Caught in the Wheels: The High Cost of Being a Female Cog in the Male Machinery of Engineering," pp. 126-33 in MacKenzie and Wajcman Social Shaping of Technology, 1999. Buckingham: Open University Press.

**June 22- BIOMEDICAL SCIENCES**

The Gender of Science (2002), by Janet A. Kournay

Rosser, Sue "Androcentric Bias in Clinical Research," pp. 228-236.

June 23 The Gender of Science (2002), by Janet A. Kournay

Krieger, Nancy and Elizabeth Fee, "Man-made Medicine and Women's Health: The Biopolitics of Sex/Gender and Race/Ethnicity," pp. 237-249

**Critical Reflection Paper Due!**

**June 24 No Class Research Day**

**June 25 No Class Research Day**

June 29 Women, Science and Technology 2<sup>nd</sup> edition, edited by Mary Wyer et al., New York & London: Routledge, 2009.

Kessler, Suzanne. "The medical construction of Gender: Case Management of Intersexed Infants," pp. 205-218.

June 30 The Gender and Science Reader, (2001) edited by Muriel Lederman and Ingrid Bartsch, London and New York: Routledge

Birke, Lydia, "In pursuit of difference: scientific studies of women and men," pp. 308-322.

- July 1 **The Gender and Science Reader, (2001) edited by Muriel Lederman**  
Kaplan, Gisela and Lesley J. Rogers, "Race and Gender Fallacies: the paucity of biological determinist explanations" pp. 323-342.
- July 2: Charis Thompson, "Stem cells, Women, and the new gender and science" in Gendered Innovations in Science and Engineering ed. By Londa Schiebinger, California: Stanford Univ Press, 2008. Pp. 109-130.

July 6 **Presentations**

July 7 **Presentations**

July 8 **Gender, Science, and Reproductive Technology**

**The Gender of Science (2002), by Janet A. Kournay, Upper Saddle River, NJ: Prentice Hall,**

Hubbard, Ruth, "The New Procreative Technologies , pp. 250-266 (read)  
Julie Wallbank, "Throwing baby out with the bathwater: some reflections on the evolution of reproductive technology" Res Publica, Volume 5, Number 1 / January, 1999 [Available On-line – Springerlink] - Skim

- July 9 Dorothy Roberts, **Killing the black body: race, reproduction, and the meaning of liberty.** Introduction (pp. 3-21) and Chapter 7 (pp.294-312)

July 13 **Gender, Science, Technology and Policy**

Hanson, Sandra L. (1996). **Lost Talent: Women in the Sciences.** Philadelphia, PA: Temple University Press, pp. 147-171.

- July 14 Etzkowitz, Henry, Carol Kemelgor, and Brian Uzzi (2000). **Athena Unbound: The Advancement of Women in Science and Technology.** Cambridge: Cambridge University Press. Pp 5-29.

- July 15 Etzkowitz et al., Athena Unbound, pp.84-103, 137-155

- July 16 Etzkowitz et al, Athena Unbound, pp. 180-201, 225-250

July 20 **Current Issues regarding Women in Science and Technology**

**Women, Science and Technology 2<sup>nd</sup> (2009), edited by Mary Wyer et al.**

Balsamo, Anne "On the Cutting: Cosmetic Surgery and New Imaging Technologies ," pp. 286—299.

- July 21 Ronit Kark (2007), "Women in the land of milk, honey, and high technology: the Israeli case," In Women and Minorities in science, Technology, Engineering and Mathematics: Upping the Numbers, ed. By Burke, Ronald, and Mattis, Mary (Cheltenham: Edward Elgar.

- July 22 Nathan Greenslit (2006), "Depression and Consumption: psycho-pharmaceuticals, branding and new identity practices."

- July 23 Kim Toffoletti (2007), Cyborgs and Barbie dolls: feminism, popular culture and the posthuman body, pp. 9-30

July 30: **RESEARCH Paper Due**