

**SCIENCE AND SOCIETY 1550B**  
**NEUROETHICS**  
**SYLLABUS (Tentative)**  
**SPRING 2010**

<b>Instructor:</b>	Jeffrey Poland	<b>Time:</b>	Tu 4-6:20pm
<b>Office:</b>	LSB 130	<b>Room:</b>	TBA
<b>Office Hours:</b>	Tu 3pm	<b>Web Site:</b>	WebCT/SCSO1550B
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In this course we will examine ethical, social, and philosophical issues raised by developments in the neurosciences. Topics will include: neurodevelopment and the emergence of persons; the impact of child abuse and poverty on brain development; aging, brain disease, brain damage, and brain death; life extension research; genetic, pharmacological, and non-pharmacological strategies and technologies for enhancement of human traits; “mind-reading” technologies; agency, autonomy, and excuse from responsibility; error and bias in memory; mind control; neuroscientific and evolutionary models of moral judgment and religious experience.

**Texts**

*Defining Right and Wrong in Brain Science*, Walter Glannon (ed.)(2007)  
*The Ethical Brain*, Michael Gazzaniga (2006)  
*Beyond Therapy: Biotechnology and the Pursuit of Happiness*, President’s Council on Bioethics (PCB) (Available on line)  
Materials on course web site and OCRA

**Requirements**

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|----|---|-----|
| 1. | Attendance and participation (including discussion board) | 20% |
| 2. | Weekly position papers (1-2 pages each, 10 required)      | 30% |
| 3. | Group research project (presentation and report)          | 25% |
| 4. | One 12-15 page final research paper                       | 25% |

**Objectives**

1. To develop an understanding of issues and contemporary social and ethical controversies raised by developments in neuroscience and related technologies.
2. To develop and practice critical skills relevant to the analysis of controversies (e.g., conceptual clarification, argument analysis, assessment of positions).
3. To develop and practice skills relevant to conducting research and writing on controversial issues concerning science and society.
4. To develop and practice skills relevant to preparing and delivering public presentations.

## Class Schedule and Assignments

**2/2 Introduction to the Course**

**2/9 Background and Overview of the Issues**

- UPENN Web Site on Neuroethics (<http://neuroethics.upenn.edu/>)
- Farah and Wolpe (2004), "Monitoring and Manipulating Brain Function: New Neuroscience Technologies and Their Ethical Implications", in Glannon (2007), Ch. 4, p. 37-57
- Gazzaniga (2005), Preface, p. xiii-xix
- Glannon (2007), Introduction, p.xiii-xviii; Epilogue, p. 369-377
- Kitcher (2004), "Responsible Biology"

**Due:** PP1

**DBE1:** Pre-implantation genetic testing and designer babies

**2/16 No Class (DBE in progress)**

- Agar (2006), "Designer Babies: Ethical Considerations"
- Sandel (2004), "The Case Against Perfection"
- Cooper & Hampton (2007), "Reproductive Technology in the Context of Reproductive Teleology"
- Steinbock (2008), "Designer Babies: Choosing Our Children's Genes"
- Pinker (2003), "Human Nature and Its Future" (Optional)

**2/23 Genetic Enhancement:** Issues concerning various strategies for genetic enhancement; choosing in, selecting out, fixing up; targeting genetic disease, vulnerabilities to disease, or sub-optimal traits; the enhancement/therapy distinction; designer babies; savior babies; genetic testing in the workplace and for insurance; lessons for neuroscience

- Gazzaniga (2005), Ch. 3, p. 37-54
- PCB (2003), *Beyond Therapy*, Ch. 2, p. 27-68
- Rawbone (1999), "Future Impact of Genetic Screening in Occupational and Environmental Medicine"
- Nowlan (2002), "A Rational View of Insurance and Genetic Discrimination"
- Rothenberg & Terry (2002), "Before It's Too Late – Addressing Fear of Genetic Information"
- Raithana & Smith (2004), "Disclosure of Genetic Tests for Health Insurance: Is It Ethical Not To?"

**Due:** PP2

**3/2 Neuro-Enhancement 1:** Issues concerning the use of pharmacological technologies to enhance biological and psychological traits (e.g., athletic ability, artistic ability, cognitive capacities, mood, sleep, sex); applications

in clinical, educational and legal contexts

- Gazzaniga (2005), Ch. 4-5, p. 55-84
- PCB (2003), *Beyond Therapy*, a) Ch. 2, p.71-98, b) Ch. 5, p. 205-234
- Glannon (2007), Part V, p. 258-288 (Glannon; Caplan; McHue)
- Greely, et al (2008), "Towards Responsible Use of Cognitive-Enhancing Drugs by the Healthy"
- Cooper (2004), "Education in the Age of Ritalin" (Optional)
- Zonana (2003), "Competency to Be Executed and Forced Medication: *Singleton v. Norris*" (Optional)

**Due:** PP3

**3/9**

**Neuro-Enhancement 2:** Issues concerning use of non-pharmacological technologies to enhance human biological and psychological traits; germline engineering; surgery; deep brain stimulation; transcranial magnetic stimulation; vagus nerve stimulation; brain-machine interfaces; cyborgs and human nature

- Foster (2006), "Engineering the Brain"
- Fenton & Alpert (2008), "Extending Our View on Using BCIs for Locked-In Syndrome"
- Persaud, et al (2003), "Should Neurosurgery for Mental Disorder Be Allowed to Die Out?"
- Donoghue, et al (2007), "Assistive Technology and Robotic Control Using Motor Cortex Ensemble-Based Neural Interface Systems in Humans with Tetraplegia" (Optional)
- Clark (2003), "Natural Born Cyborgs?"
- Bostrum (2005a), "In Defense of Posthuman Dignity"

**Due:** PP4

**3/16**

**Lifespan Neuroethics:** Issues concerning neurodevelopment and the emergence of consciousness, personhood and moral status; impact of poverty and child abuse on neurodevelopment; the "consciousness continuum"; mental decline associated with aging, disease, and injury; life extension research

- Gazzaniga (2005), Ch. 1-2, p. 3-33
- Teicher (2002), "Scars That Won't Heal"
- Farah, et al (2005), "Poverty, Privilege, and Brain Development: Empirical Findings and Ethical Implications"
- Glannon (2007), Part VI, p. 344-365 (Schiff & Finns; Finns)
- Bostrum (2005b), "Recent Developments in the Ethics, Science, and Politics of Life-Extension"
- PCB (2003), *Beyond Therapy*, Ch. 4, p. 159-204 (Optional)

**Due:** PP5

**DBE2:** Mind-reading technologies in courts and for anti-terrorism activity

3/23

**Mind Reading:** Issues concerning the use of neuro-scientific findings and techniques to “read minds”: deception detection (e.g., lie detection, guilty knowledge, brain fingerprinting), brain typing (e.g., personality, racial attitudes, intelligence, violence, sexual preferences, empathy, mental disorder); use of mind reading technologies in courts (e.g., jury selection, evaluation of testimony, parole, commitment); use of such technologies in anti-terrorism activities; use to detect violent tendencies, suicidal risk, and psychosis in clinical or legal settings; neuromarketing applications

-Gazzaniga (2005), Ch. 7, p. 103-119

-Committee on Science and the Law (2005), “Are Your Thoughts Your Own?”

-Stoller & Wolpe (2007), “Emerging Neurotechnologies for Lie Detection and the Fifth Amendment”

-Brain Fingerprinting Laboratories Web Site

(<http://www.brainwavescience.com/HomePage.php>)

**Due:** PP6, Prospectus for Individual Research Paper, Course Portfolio

3/30

### **Spring Break**

4/6

**Error and Bias in Memory:** Issues concerning tendencies and vulnerabilities to error and bias in memory; eye witness testimony and false memories; repressed memories and child abuse; detecting true memories; memory and self identity; neuromarketing applications

-Gazzaniga (2005), Ch. 8, p. 120-142

-Loftus (1997), “Creating False Memories”

-Loftus (2003), “Our Changeable Memories: Legal and Practical Implications”

-Braun, et al. (2002), “Make My Memory: How Advertising Can Change Our Memories of the Past”

-Laney & Loftus (2005), “Traumatic Memories Are Not Necessarily Accurate Memories”

-Schacter, D. (1999), “The Seven Sins of Memory: Insight from Psychology and Cognitive Neuroscience”

-Cheit, “The Recovered Memory Project” ([www.RecoveredMemory.org](http://www.RecoveredMemory.org))

**Due:** PP7, Group Project Prospectus

**DBE3:** Excuse from responsibility in adolescents, criminals, and addicts

4/13

**Free Will, Addiction, Crime, and Responsibility:** Issues concerning the nature of “free will”/“free action”, human autonomy, and moral agency; conceptions of responsibility and excuse; addiction (e.g., drugs, gambling, sex), disease, self-control, and responsibility; criminal responsibility and neuroscience-based excuses; implications of neuroscience for the assumptions of the legal system; possible reform of the legal system

- Gazzaniga (2005), Ch. 6, p. 87-102
- Churchland (2006), “The Big Questions: Do We Have Free Will?”
- Roskies (2006), “Neuroscientific Challenges to Free Will and Responsibility”
- Glannon Ch. 18, p. 195-205 (Morse)
- Morse (2006), “Brain Overclaim Syndrome and Criminal Responsibility”
- Roper v Simmons: AMA Brief; Court Decision
- Bonnie (2002), “Responsibility for Addiction” (Optional)
- Blair (2008), “The Cognitive Neuroscience of Psychopathy and Implications for Judgments of Responsibility” (Optional)
- Greene and Cohen (2004), “For the Law, Neuroscience Changes Nothing and Everything” (Optional)

**Due:** PP8

**4/20**

**Neuroscience and Morality:** Issues concerning evolutionary and neuroscientific accounts of moral judgment, moral emotions, moral decision making; moral dilemmas and “The Moral Sense Test”

- Gazzaniga (2005), Ch. 9-10, p. 145-178
- Glannon Ch. 19, p. 206-220 (Casbeer)
- Glannon Ch. 20, 221-229 (Greene)
- Greene (in press), “Social Neuroscience and the Soul’s Last Stand”
- Hauser, “Is Morality Innate and Universal?”
- “The Moral Sense Test” (<http://moral.wjh.harvard.edu/>)

**Due:** PP9, Individual Research Paper Outline

**DBE4:** Initial posting

**4/27**

**Presentation 1:** TBA

**Presentation 2:** TBA

**Due:** PP10

**5/4**

**Presentation 3:** TBA

**Presentation 4:** TBA

**5/11**

**Presentation 5:** TBA

**Presentation 6:** TBA

**5/18**

**Due:**

- Final Course Portfolio (all position papers, research paper and outline)
- Group Project Report and Powerpoint Presentation (Handout Mode x 4)

## GENERAL GUIDELINES

1. The format of the course will be that of a seminar in which participants are expected to attend and come prepared for all classes. Classes will involve (a) discussion of assigned readings and associated study questions and (b) group presentations on selected topics (see below.)
2. Over the course of the semester, I will post weekly informal writing assignments. Each will require a 1-2 page (typed, double-spaced) position paper addressing a specific question regarding some controversial question. Each paper should include a statement of the question, a statement of your position, and a formulation of an argument for your position. In addition to the various questions I will frame, you are free to frame additional questions for the purpose of this part of the course. Extra credit is possible for completing more than the 10 required position papers. All position papers may be submitted electronically (email or WebCT) or in the traditional paper-based way.
3. At the beginning of the semester, research groups will be formed on the basis of preference for working on some topical area related to the course. During the semester, groups will be expected to formulate a specific question in their chosen area, to research the question, to prepare and present a 40 minute Powerpoint presentation to the seminar, and to write a report of their collaborative work. I will consult with each group to help clarify the question, to assist in developing research strategies, and to provide advice and further guidelines regarding the presentation and the report. A prospectus for the group project should be submitted by April 6.
4. A final 12-15 page research paper will be due by May 18. The paper should address one of the topics discussed in the course and it should focus on a specific question that draws out a controversy related to that topic. In the paper, you will be expected to: clarify the question, articulate your position, formulate an argument for your position, identify important objections to your argument, formulate your replies to the objections, and discuss the significance of the question and your response to it. Evaluation of the papers will be based on (a) organization, focus, and clarity of your writing, and (b) quality of the arguments provided in support of your position. A prospectus for your paper should be submitted by March 23, and an outline should be submitted by April 20. During the semester I will be available to meet with each of you to discuss your paper and to review outlines and preliminary drafts.
5. The course web site (on WebCT) contains a number of resources for each of the topics we will discuss in the course. These will include: links to electronic reserves for assigned readings (password = "neuroethics"); links to other assigned or optional readings; supplementary documents; and links to relevant web sites on the internet. Weekly writing assignments ("position papers") will be posted on the web site under "Writing Assignments". We will also make use of the Discussion

Board on the web site for the purpose of extending discussions outside of class as well as for providing individuals (or groups) with an opportunity to try out ideas and arguments related to their group presentation, individual research project, or weekly readings and writing assignments. In addition, there will be four discussion board exercises involving focused critical exchanges on assigned questions. A portion of the “participation” component of the course grade will be based on the extent and quality of your use of the discussion board (e.g., how many “threads” you initiate, how many threads you contribute to, and the relevance and substance of your comments.)

6. The following is due on **March 23** for Midterm review:
  - Individual Portfolio containing a) all position papers (include original if a paper is re-written); b) prospectus for individual research paper; c) any materials related to the group project
  
7. The following are due by **May 18**:
  - Group Project Report (one per group) including a printout of the Powerpoint Presentation (in handout mode, 4 frames per page)
  - Individual Portfolio containing: a) all position papers (include original if a paper is re-written); b) individual research paper; c) additional materials related to the group project
  
8. If at any time during the semester you have a question or concern about the course, please do not hesitate to contact me in order to discuss it.