



Online Ethics Center  
FOR ENGINEERING AND SCIENCE

# Syllabus - Biology 611, Ethics of Human Enhancement

## Author(s)

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## Description

Bio 611: Ethics of Human Enhancement is a syllabus for a one credit graduate course. Taught at Arizona State University, Bio 611 attracts a mix of natural science and humanities graduate students and does not assume students will have substantial experience in ethics. Beyond exploration of the topic of ethics of human enhancement, the course aims to develop the ability of students to analyze ethical issues through the incorporation of case discussion and case writing.

## Abstract

The author wishes to acknowledge the contributions of Karin Ellison, OEC - Life and Environmental Sciences Editor, and Joseph Herkert, OEC Engineering co-Editor. They provided valuable input in selecting topics and crafting the resources.

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Semester  
Session, Dates  
Day, Time  
Place  
1 credit

# **Biology 611**

## **Ethics of Human Enhancement**

Instructor  
E-Mail  
Phone  
Office  
Office Hours

Developed by Valerie  
Racine, Arizona State  
University, Spring 2016

### **Course Overview**

Discussions of the ethics of human enhancement typically address a variety of issues in practical ethics focused on developments of healthcare and biomedical technologies, including knowledge of the science underlying current and prospective methods of human enhancement, as well as their social and political contexts. In this course, we will focus our discussions on particular case studies in order to reflect on some important cross-cutting themes in the ethics of human enhancement, including the distinction between therapy and enhancement, questions about safety and fairness, issues about governance and the regulation of new therapies and technologies, concerns about justice, human nature, authenticity, and the pursuit of the good life. The ethical analysis of human enhancement requires an inquiry into past, present, and possible future technologies, their applications, and their ethical, social, economic, legal, political, and ecological implications. It also requires recognition of the fact that social and cultural values influence the research, development, and adoption of certain types of enhancements and enhancement biotechnologies over others, as much as healthcare and technological innovations drive these social and cultural changes.

### **Learning Outcomes**

In this course, students will learn how to identify and evaluate the potential benefits and risks within particular cases of human enhancement biotechnologies and applications, as well as analyze crosscutting themes in the ethics of human enhancement. These themes include: 1) questions about the appropriate scope of

biomedicine and healthcare (i.e. therapy vs. enhancement), 2) concerns about safety and fairness 3) issues in the governance of science, technology, and healthcare in democracies, and 4) competing views of justice and human flourishing. Students will be encouraged to incorporate different levels of analyses, critical perspectives, ethical principles, and competing values into a rigorous ethical analysis of human enhancement technologies and applications.

## **Requirements**

The assignments are readings, short response papers, and a case or book review. Natural science and engineering graduate students typically prepare a case, while graduate students in humanities or social science programs typically prepare a book review. In week one or two of class, we will decide which formal writing assignment you will complete.

## **Readings**

The Course Schedule gives the reading assignments. Students must complete readings before each class so that discussion can draw on knowledge of the readings. The reading materials will be posted on Black Board.

## **Response Papers**

Each session students will write brief (1-page) response papers on the assigned readings. These informal essays should state the argument of each piece assigned and raise two issues for discussion. At least one point should be positive - i.e. discuss some fashion in which a reading for the week might serve as a model for scholarship. The response papers are due at each class session on paper.

## **Cases**

Students are required to write a 1-page narrative, which can be a summary of an actual event or a hypothetical scenario, and four pages of ethical analysis. The analysis will follow a format that we will discuss during week one.

Draft is due via Blackboard AND in hard copy in class. Students will present their cases for class discussion. During the discussion, we will workshop the draft case. Final cases and case analyses, incorporating comments from class discussion, are

due via Blackboard one week after the last class meeting.

## Book Review

Students preparing book reviews will write a 4 to 5-page book or article review of humanistic or social science scholarship on the unit topic. Students will need to explore the literature beyond that assigned for class. The review should be modeled on those in *Science and Engineering Ethics*, *American Journal of Bioethics*, *Technology and Culture*, *ISIS*, or another similar type of academic journal. I must approve the book or articles you wish to review. If you don't know how to locate this kind of scholarship, I can give you tips. You will also need to submit a draft review for comments before the final submission.

## Evaluation

Grades will generally be calculated as follows:

- Attendance, demonstrated knowledge of assigned readings, and thoughtful contributions to discussion: 20%
- 6 response papers: 30%
- Draft case or book review: 20%
- Final case or book review: 30%

	<b>Percentage</b>
A+	98-100%
A	93-97%
A-	90-92%
B+	87-89%
B	83-87%
B-	80-82%
C+	77-79%
C	70-76%
D	60-69%
E/F	0-59%

I reserve the right to assign any student a final grade that is higher than merited by strict calculation based on academic criteria, such as improvement in grades over the semester or atypical and explainable poor performance on a single assignment.

I only accept late assignments in rare circumstances. These include professional conflicts, traveling with a sports team, major and documented illnesses, personal and family crises, etc. Should any of these arise, you are responsible for discussing the circumstances with me ASAP, before the deadline if possible.

Likewise, incompletes will only be given in extraordinary circumstances. To receive an incomplete, you would work with me to prepare a written agreement specifying how and when all work for the course would be completed. This agreement would have to be signed before I submit grades at the end of term.

## **Student Conduct and Academic Integrity**

Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions, and records. The possible penalties include, but are not limited to, appropriate grade penalties, course failure indicated on the transcript as a grade of E, course failure due to academic dishonesty indicated on the transcript as a grade of XE, loss of registration privileges, disqualification, and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>. Additionally, required behavior standards are listed in the Student Code of Conduct and Student Disciplinary Procedures, Computer, Internet, and Electronic Communications policy, and outlined by the Office of Student Rights and Responsibilities. Anyone in violation of these policies is subject to sanctions.

It would be especially pathetic to fail an ethics course for cheating!

Students are entitled to receive instruction free from interference by other members of the class. An instructor may withdraw a student from the course when the student's behavior disrupts the educational process per Instructor Withdrawal of a Student for Disruptive Classroom Behavior.

Appropriate online behavior, also known as netiquette, is expected. This includes keeping course discussion posts focused on the assigned topics. Students must maintain a cordial atmosphere and use tact in expressing differences of opinion. The instructor may delete inappropriate discussion board posts.

The Office of Student Rights and Responsibilities accepts incident reports from students, faculty, staff, or other persons who believe that a student or a student organization may have violated the Student Code of Conduct.

## **Accessibility Statement**

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act as amended (ADAAA) of 2008, professional disability specialists and support staff at the Disability Resource Center (DRC) facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities.

Qualified students with disabilities may be eligible to receive academic support services and accommodations. Eligibility is based on qualifying disability documentation and assessment of individual need. Students who believe they have a current and essential need for disability accommodations are responsible for requesting accommodations and providing qualifying documentation to the DRC. Every effort is made to provide reasonable accommodations for qualified students with disabilities.

Qualified students who wish to request an accommodation for a disability should contact the DRC by going to <https://eoss.asu.edu/drc>, calling (480) 965-1234 or emailing [DRC@asu.edu](mailto:DRC@asu.edu).

## **Course Schedule**

Class 1: Introduction to the Ethics of Human Enhancement

### **ASSIGNED:**

Sandler, R.L. "Introduction: Technology and Ethics," in R.L. Sandler (ed.). *Ethics and Emerging Technologies*. Palgrave Macmillan, 2014, 1-23.

Juengst, Eric and Moseley, Daniel, "Human Enhancement", *The Stanford Encyclopedia of Philosophy* (Summer 2015 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/sum2015/entries/enhancement/>>.

<http://plato.stanford.edu/entries/enhancement/>

### **RECOMMENDED:**

Allhoff, Fritz, Patrick Lin, and Jesse Steinberg. "Ethics of human enhancement: an executive summary." *Science and Engineering Ethics* 17, no. 2 (2011): 201-212.

Lin, Patrick, and Fritz Allhoff. "Untangling the debate: The ethics of human enhancement." *Nanoethics* 2, no. 3 (2008): 251-264.

The President's Council on Bioethics, Washington, D.C. *Beyond Therapy: Biotechnology and the Pursuit of Happiness*. October 2003. (Chapter One)  
<https://bioethicsarchive.georgetown.edu/pcbe/reports/beyondtherapy>

## Class 2: Cognitive Enhancements & Memory Suppressors

### ASSIGNED:

#### Case Study: Memory Suppressor as Cognitive Enhancement

Farah, Martha J., Judy Illes, Robert Cook-Deegan, Howard Gardner, Eric Kandel, Patricia King, Eric Parens, Barbara Sahakian, and Paul Root Wolpe. "Neurocognitive enhancement: what can we do and what should we do?." *Nature reviews neuroscience* 5, no. 5 (2004): 421-425.

### RECOMMENDED:

Henry, Michael, Jennifer R. Fishman, and Stuart J. Youngner. "Propranolol and the prevention of post-traumatic stress disorder: Is it wrong to erase the "sting" of bad memories?" *The American Journal of Bioethics* 7, no. 9 (2007): 12-20.

Hurley, Elisa A. "The moral costs of prophylactic propranolol." *The American Journal of Bioethics* 7, no. 9 (2007): 35-36.

Rosenberg, Leah B. "Necessary forgetting: On the use of propranolol in post-traumatic stress disorder management." *The American Journal of Bioethics* 7, no. 9 (2007): 27-28.

## Class 3: Enhancement, Anti-Aging Medicine & Life-Extending Biotechnologies

### ASSIGNED:

#### Case Study: Enhancement, Anti-Aging Medicine & Life-Extending Biotechnologies

Partridge, Brad, and Wayne Hall. "The search for Methuselah." *EMBO reports* 8, no. 10 (2007): 888-891.

Juengst, Eric T., Robert H. Binstock, Maxwell Mehlman, Stephen G. Post, and Peter Whitehouse. "Biogerontology, 'anti-aging medicine,' and the challenges of human enhancement." *Hastings Center Report* 33, no. 4 (2003): 21-30.

**RECOMMENDED:**

The President's Council on Bioethics, Washington, D.C. *Beyond Therapy: Biotechnology and the Pursuit of Happiness*. October 2003. (Chapter Four)  
<https://bioethicsarchive.georgetown.edu/pcbe/reports/beyondtherapy>

de Grey, Aubrey DNJ. "Life extension, human rights, and the rational refinement of repugnance." *Journal of Medical Ethics* 31, no. 11 (2005): 659-663.

Gems, David. "Is More Life Always Better?: The New Biology of Aging and the Meaning of Life." *Hastings Center Report* 33, no. 4 (2003): 31-39.

Turner, Leigh. "Biotechnology, bioethics and anti-aging interventions." *TRENDS in Biotechnology* 22, no. 5 (2004): 219-221.

Class 4: Mitochondrial Replacement Therapy – Enhancing the Germline?

**ASSIGNED:**

Case Study: Mitochondrial Transfer Therapy as Enhancement Technology

Savulescu, Julian. "Mitochondrial disease kills 150 children a year. A micro-transplant can cure it." *The Guardian*. February 2, 2015. Accessed March 21, 2016.  
<https://www.theguardian.com/science/2015/feb/02/mitochondrial-transfer-micro-transplant-parliamentary-debate>

Baylis, Françoise. "Ethical Objections to Mitochondrial Replacement." *Impact Ethics*. July 2, 2013. Accessed March 21, 2016. <https://impactethics.ca/2013/07/02/ethical-objections-to-mitochondrial-replacement/>

**RECOMMENDED:**

Dimond, Rebecca. "Social and ethical issues in mitochondrial donation." *British medical bulletin* 115, no. 1 (2015): 173-182.

Bredenoord, Annelien L., Wybo Dondorp, Guido Pennings, and Guido De Wert. "Ethics of modifying the mitochondrial genome." *Journal of medical ethics* 37, no. 2



(2011): 97-100.

## Class 5: Animal Disenhancement & Human Enhancement

### ASSIGNED:

#### Case Study: Animal Disenhancement & Human Enhancement

Thompson, Paul B. "The opposite of human enhancement: nanotechnology and the blind chicken problem." *Nanoethics* 2 (2008): 305-316.

### RECOMMENDED:

Henschke, Adam. "Making sense of animal disenhancement." *NanoEthics* 6, no. 1 (2012): 55-64.

Schultz-Bergin, Marcus. "Making better sense of animal disenhancement: a reply to Henschke." *NanoEthics* 8, no. 1 (2014): 101-109.

## Class 6: Robots, Human Enhancement, and Human Rights

### ASSIGNED:

Case Study: Human enhancement, robots, and the fight for human rights - <http://www.fidis.net/resources/identity-use-cases-scenarios/human-enhancement-robots-and-the-fight-for-human-rights/>

Clarke, Roger. "Cyborg rights." In *Technology and Society (ISTAS), 2010 IEEE International Symposium on*, pp. 9-22. IEEE, 2010.

## Class 7: Transhumanism as a Cultural Movement

### ASSIGNED:

Bostrom, Nick. "Transhumanist Values." In *Ethical Issues for the 21st Century*, ed. Frederick Adams (Philosophical Documentation Center Press, 2003); reprinted in *Review of Contemporary Philosophy*, Vol. 4, May (2005).

<http://www.nickbostrom.com/ethics/values.html> (Accessed April 27, 2016.)

McNamee, M. J., and S. D. Edwards. "Transhumanism, medical technology and slippery slopes." *Journal of medical ethics* 32, no. 9 (2006): 513-518.

**RECOMMENDED:**

Istvan, Zoltan. "A New Generation of Transhumanists is Emerging." *The Huffington Post*. March 10, 2014. (Accessed April 27, 2016.)

[http://www.huffingtonpost.com/zoltan-istvan/a-new-generation-of-trans\\_b\\_4921319.html](http://www.huffingtonpost.com/zoltan-istvan/a-new-generation-of-trans_b_4921319.html)

<http://www.singularitysymposium.com/transhumanism.html>

**Contributor(s)**

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**Rights**

Use of Materials on the OEC

**Resource Type**

Instructor Materials

**Parent Collection**

Ethics of Human Enhancement Collection

**Topics**

Controversies

Human Enhancement

**Discipline(s)**

Life and Environmental Sciences