

Questions to consider: Are scientists to be held accountable for how their research is applied? Is there any science not worth pursuing because of how it might/could be used? Is science blind to moral and ethical judgment? Should science have a conscience?

Possible Text: Excerpts from [Global Catastrophic Risk](#)
[Environmental Ethics: An Introduction to Environmental Philosophy](#)
[Environmental Ethics: An Overview for the Twenty-First Century](#)
[Environmental Ethics: Divergence and Convergence](#)

Overview: Science has long been a discipline about discovering truths and how the world works. However, historically, it has also been viewed as a discipline that has absolved itself of moral or ethical responsibility; simply put, that it is objective and not subject to moral or ethical judgment. More and more, though, scientists are trying to be more responsible and are being held to a higher moral and ethical standard. In this course, the students will study and discuss significant scientific discoveries of the past, present, and future in terms of the ethics and morality of these scientific discoveries and their applications regardless of the power or say scientists may have had over any decisions of the use of their discoveries. The students will delve into not only the science behind the discoveries, but they will also attempt to decide whether or not these discoveries should have been or should be pursued.

The benefits of science will always have a price tag. It is in our best interest as a species to be able to find the threshold of what that price tag is and not go over it. How much is too much? When is enough enough? Or does this threshold an illusion that serves as a way in which to scare scientists and the public from advancing too far? Won't science and technology be able to solve any problem that we create? The price of technology of decades ago was usually limited to the immediate vicinity of the application such as a boiler explosion of a steam engine (GCR, Bostrom, N & Cirkovic, M, 2008) It may have only injured, albeit severely, the scientist working on it, but had no effect outside of that realm. Nowadays and in the future, technological "accidents" can have effects on a global scale in our wired world. What can we do to best prevent these global accidents from occurring? How does one calculate and assess global catastrophic risk?

In order to gain a grip of where to start, we must examine from where we have come. To that end, during the fall term, students will learn about historical scientific discoveries. They will learn and research how these discoveries came uncovered. What were the driving forces behind these discoveries? As hindsight is 20/20, they will have the benefit of knowing the implications of these discoveries to reach a conclusion as to whether or not they should have been pursued. However, in some cases, their vision may not be so clear. Just because we know the outcome, it does not mean that it is obvious if these discoveries were worthwhile or not.

During the winter term, students will examine some of the cutting edge science of our time. In the 21st century, they will be the ones who will eventually be making the decisions of what should and should not be studied (and funded). They will study the benefits and drawbacks of topics such as stem cell technology, cloning, and other genetic modification techniques for both plants and animals. Other topics could include aquaculture and its impacts (both good and bad) on the environment. What do we have to gain from these technologies? What foreseeable consequences do they have? What unforeseeable consequences could there be? Is the risk too great?

During the spring term, the students will forecast some future technologies and sciences. They will try to envision what our world will look like into the next century. With the rapid pace at which technology can change our world, it is our moral and ethical responsibility to be mindful of the consequences, both

intentional and accidental, of our actions and applications of scientific discovery and new technology. After all, it is the students of the now who are going to be in the position to make the decisions (moral, economic, scientific, political, etc) that will shape our world in the 21st century and beyond. What should that world look like?

Methods: I am also planning on "flattening" my classroom based on the book "The World Is Flat" by Thomas L. Friedman. In his book there is a description of a woman who is breaking down the walls of the classroom and doing projects with other teachers from other schools with similar curriculum via the Internet. I envision many in-class debates both formal and informal as part of the curriculum. In preparing for these debates, the students will prepare research papers, PowerPoint presentations, and other types of multimedia projects. I would like to be able to bring in guest speakers, watch movies and documentaries, and create links with other schools around the world.

In doing so, the students will be learning to:

1. Develop critical thinking skills in evaluating these various scientific discoveries and their consequences
2. Listen carefully and communicate effectively through debate and discussion when trying to make their views and opinions heard but with tact and compassion.
3. Appreciate the opinions of others around the world and not only their own or their classmates
4. Use the Internet as an educational, informational, sharing tool
5. Become an educated global citizen who hopefully realizes that their actions have many more consequences besides for which they were intended

Possible Issues:

1. FALL TERM: Historical
 - a. Nuclear Power/Atomic Bomb
 - b. Polio Vaccine
 - c. Sputnik & Star Wars
 - d. Eugenics
 - e. Tuskegee Airmen
2. WINTER TERM: Present
 - a. Stem Cells
 - b. Cloning
 - c. Genetic Modification (both animal and plant)
 - d. Aquaculture-salmon farming and the damage it is causing to wild salmon
3. SPRING TERM: Future
 - a. Nanotechnology
 - b. Hypothetical: Would the ability to read someone's mind be good? Should it be explored and tested? What good could come of it besides the knowledge of be able to do it?
 - c. Artificial Intelligence: How far do we go? How "intelligent" is too intelligent?