Overview
When founded to advance U.S. military needs during World War II, Oak Ridge was known as Atomic City; we will build on this history to explore the ways that scientists have engaged with social and ethical issues related to their scholarly activities. How have the types of science associated with Oak Ridge National Laboratory impacted society? How have values entered into science and how should scientists incorporate values into our professional lives?

This course is for undergraduates who identify as scientists or future scientists. It will provide you with opportunities to explore how your values intersect with your choice to pursue a scientific career. Because we are in residence near the Oak Ridge National Laboratories, many of our common readings will focus on nuclear weapons and nuclear energy but students will have the opportunity for independent work to explore the social and ethical issues most important for their scientific interests.

Professor
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I am a microbiologist and molecular biology professor from Colorado College. I grew up in rural Nebraska and I was the first in my family to go to college. I earned an I.B. from UWC-USA, a B.A. in Biology at Grinnell College and a Ph.D. in Microbiology and Molecular Genetics from Harvard University. I believe that science would be better if every scientist had an excellent liberal arts education and if scientists were as diverse as the world around us. In my lab, undergraduates study how bacteria exchange DNA and evolve; I recently wrote a textbook about viruses.

Learning objectives
By the end of this course students will be able to analyze, explain, and discuss:

- Ethical and social issues pertaining to research at ORNL;
- The extent to which
  - funding sources impact science and the scientific community;
  - scientific authority confers both privileges and thus responsibilities on scientists;
  - an individual scientist has responsibility for considering how their research is applied;
  - scientists should take responsibility for communicating science to the general public and addressing pseudoscience; and
- The role of scientists in setting science policy.
Required texts
- The Girls of Atomic City, a book by Denise Kierman
- Big Science: Earnest Lawrence and the Invention that Launched the Military-Industrial Complex, a book by Michael Hiltzik
- Manual for Survival: An Environmental History of the Chernobyl Disaster, a book by Kate Brown
- Others, such as research articles, films, or podcasts rather than books, to be announced.

Grading
I will assign letter grades based mainly on the percentage of points available that you earn according to the following scheme. Occasionally, I curve the grades up or reduce someone’s grade because of especially poor or counterproductive engagement during class.

94 -100% = A   90 - 93% = A-
87 - 89% = B+   84 - 86% = B   80 - 83% = B-   77 - 79% = C+
74 - 76% = C   70 - 73% = C-   65 - 69% = D   below 65% = F

Likely graded assignments (as of Dec. 3, 2020)
- Participation in required class activities such as online or in-person discussions (10% of final grade);
- Prepare a library-researched paper, podcast, or video about a scientist and how they viewed their work in relation to an important social or ethical issue in their field (15% of final grade);
- Prepare a library-researched paper about a social or ethical issue related to your scientific interests and present the ideas in it to the class (25% of final grade);
- Propose and justify a new exhibit at the local Atomic City museum including the text of a ten-minute “guided tour” to accompany the exhibit (25% of final grade); and
- Prepare an annotated bibliography for future ACM-ORNL students who want to read more about how scientists can engage with ethical issues related to their scholarly activities (25% of final grade).

Approximate weekly schedule
1. The Girls of Atomic City
2. The Girls of Atomic City
3. Atomic & nuclear museums
4. Atomic & nuclear museums
5. Big Science
6. Big Science
7. Big Science
8. Big Science
9. Chernobyl
10. Chernobyl
11. Climate science and climate justice
12. Climate science and climate justice
13. COVID-19
14. COVID-19
15. Students present their library-researched projects