

HNRS 120

Science and the Good Life

Spring 2024

Class Mtgs: Maxey 106, T/Th 1:10-2:40 PM Instructor: Daniel Robb
Office: Massengill 243 Office Hrs: T/Th 9:30-11:00
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Course Description:

Many key issues facing us as a society have important scientific or quantitative components. This leads one to ask: In what ways is scientific and quantitative literacy necessary to leading a good and ethical life in the 21st century? As science progresses, energy sources are becoming more or less expensive and available. Technological developments in biology and nanotechnology are enabling us to alter the capabilities of organisms in novel ways. How should our ethical thinking be adapted as these capabilities continue to develop? As we educate ourselves about the science behind these topics, we will engage with various ethical thinkers in an effort to clarify the relevance of scientific and quantitative literacy, and technological progress, to the good and ethical life in the 21st century. We will also engage with members of Roanoke's Elderscholars program to share our findings and to benefit from their wisdom on leading an examined life.

Materials and Textbooks:

- *What Every Student Should Know About Preparing Effective Oral Presentations*, by Martin R. Cox, Pearson, 1st edition (2006). ISBN-13: 978-0205505456
- *Ethical Argument: Critical Thinking in Ethics*, by Hugh Mercer Curtler, Oxford University Press, 2nd edition (2004). ISBN-13: 978-0195173161.
- *Stat-Spotting: A Field Guide to Identifying Dubious Data*, by Joel Best, University of California Press: Paperback, 2nd edition (2013). ISBN-13: 978-0520279988
- *Energy for Future Presidents*, by Richard Muller, W.W. Norton & Company (2013). ISBN-13: 978-0393345100
- *Frankenstein's Cat: Cuddling Up to Biotech's Brave New Beasts*, by Emily Anthes, Scientific American / Farrar, Straus and Giroux (2014). ISBN-13: 978-037453424

Intended Learning Outcomes:

1. Students will be able to formulate and evaluate arguments about ethical positions.
2. Students will be able to describe connections between the course topic and broader traditions of critical reflections on the good life.
3. Students will be able to give an effective oral presentation.
4. Students will be able to write a paper with a clear thesis, cogent argumentation, effective organization, and a minimum of sentence-level errors.
5. Students will connect course content to their lives and to communities beyond the classroom

Instruction in Oral Presentation:

A significant goal of HNRS 120 is instruction and practice in oral presentation. Delivering effective oral presentations depends on both (i) an understanding of sound principles for oral presentation and (ii) the opportunity to apply those principles by giving presentations and learning from experience. To this end, you will read about and discuss sound principles of oral presentation, and view online examples of more and less effective presentations. You will begin with short individual informal reports to the class, and then progress to planning and delivering two longer group presentations. You will receive constructive feedback from your peers and from me for both group oral presentations. You will also create and deliver modified and shortened versions of these presentations for an audience consisting of members of the Elderscholars program at Roanoke.

Teaching Methods:

The main method of instruction will be class discussion of the readings, with continued effort to explore and refine our thinking on the central inquiry questions posed in the course description. During each unit, you will be required to contribute to and read a collaborative class blog in response to the readings and class discussion. I will occasionally deliver brief lectures to present and clarify certain information from the readings. As part of your instruction in oral presentation, you will be required to give several brief oral reports during class, as a way of progressing to the longer group oral presentations and shorter oral presentations to Elderscholars participants. At the end of the semester, you will write an inquiry-focused term paper on an issue in the field of biotechnology and bio-engineering. Students will have the opportunity to give and receive peer reviews of both oral presentations and the rough draft of their term paper. You will also write a short reflection paper on your engagement with the Elderscholar residents.

Attendance Policy:

You are expected to attend every class. This benefits your education as well as that of your classmates. In addition, you need to be in class to participate in the in-class activities which form part of the class participation grade. If you are going to be absent for a valid reason, I must be notified in advance. If 3 classes are missed without prior notification, I will issue a warning email to you, your advisor, and the Registrar stating that missing a fourth class without prior notification will result in you being immediately dropped from this course. Missing a fourth class without prior notification will result in being dropped from this course with a grade of DF. You are accountable for all work missed due to absence. I will provide class materials for a missed class but will not re-teach the class during office hours.

Feedback and Evaluation:

I will assign numerical grades to all your work. I *may* curve your final grades (upward), but otherwise you can expect to receive an A for a 93-100 numerical semester average; A- for 90-92; B+ for 87-89; B for 83-86; B- for 80-82; C+ for 77-79; C for 73-76; C- for 70-72; D+ for 67-69; D for 60-66; F for 0-59. You will receive rubrics describing how the oral presentations and term papers will be evaluated by me and in the peer evaluations.

<u>Oral presentations:</u>	30% (4 @ 7.5% each)	<u>Term paper:</u>	20%
<u>Oral peer evals:</u>	10% (2 @ 5% each)	<u>Term paper (peer evals):</u>	10%
<u>Class blog entries:</u>	10%	<u>Brief oral reports:</u>	5%
<u>Participation:</u>	10%	<u>Reflection on engagement:</u>	5%

Oral presentations will be researched and given *in groups* of 3-4 students. Each group will select its own topic, subject to my approval as appropriate. I will supply you with the grading rubric to be used in evaluating the presentation. The presentations should last for 25-30 minutes, with 10 minutes allotted for questions. Shortened and appropriately focused versions of the presentations will be given to our Elderscholars members as part of their participation in the course.

Oral presentation peer evaluations will be submitted by each student for one of the other groups' presentations. The evaluation should accurately but constructively assess the the other group's presentation, using a supplied rubric and additional comments.

The 6-8 page term paper will be researched and written *individually*. You will be supplied with the grading rubric that I will use to evaluate the term papers. There will be a rough draft worth 1/3 of the term paper grade, and a revised (final) version worth the remaining 2/3 of the term paper grade.

Term paper peer evaluation: In the peer evaluation, you will provide constructive criticism on the content and style of the rough draft of another student's term paper.

Written blog entries: As a supplement and stimulus to class discussion, we will use a collaborative class blog. During each of the three course units, you will be required to contribute at least three (3) substantive comments to the class blog, for a total of nine (9) comments; more comments than this are welcome of course. Comments should actively engage the issue and previous comments; they do not need to be polished, but they should be understandable and grammatically correct. I will provide you with feedback on your blog contributions after each course unit.

Brief oral reports: Over the semester, each student will give at least two brief (1-2 minute) oral summaries of during class discussion. These will be evaluated for their clarity, and for their usefulness to the class discussion.

Class participation: You are expected to attend class consistently, and to be prepared having done the assigned readings. You will be expected to listen and engage actively in class discussion. In addition, you will have two meals with your presentation group and Elderscholars participants to discuss your presentation topic.

Reflection on engagement: You will reflect in 2-3 pages on how your experience giving the presentation and interacting with the Elderscholars participants compared with your prior expectations, as well as what you learned from the experience and from the Elderscholars participants.

Descriptions of principal assignments:

The first oral presentation will concern a current issue of societal and ethical relevance in which the interpretation of numerical statistics and data plays an important role. We will investigate several sample case studies of this type during the first unit. Your task will be to present the arguments on both sides of the issue, explain how data and statistics are being used to support each side of the argument, and comment on how the selection and presentation of numerical data affects the ethical and/or policy arguments surrounding the issue. You can also incorporate the opinions and insights that emerge from your first lunch with your Elderscholars group in this presentation. The presentation should last 25-30 minutes, with 10 minutes for questions.

The second oral presentation will concern a specific issue facing our nation and the world: the most ethically and economically sound balance of energy sources to use in the short-, medium- and long-term future. Each group will present an argument for the most ethical and strategic use of various energy sources moving forward for a specific country from this list: USA, France, Germany, Japan, China, and Russia. The presentation will draw on the scientific background of nuclear energy and power covered in the course, as well as incorporating principles of ethical argument. Again, you can incorporate the opinions and insights that emerge from your second lunch with your Elderscholars group. The presentation should last 25-30 minutes, with 10 minutes for questions.

The presentations to the Elderscholars in class will be considerably shorter and less technical versions of the longer oral presentations, for a more general audience (the Elderscholars) who have not done the readings the rest of the class has done. These presentations should last 10 minutes, with 5-10 minutes for questions.

The written term paper will concern a topic in the area of bio-ethics and bio-engineering. I will provide a list of possible topics; you may also propose your own topic, subject to my approval. The paper should draw on the scientific background covered in the course, and should incorporate the principles of ethical argument explored earlier in the course. The goal of the paper, however, rather than to only present factual information, is to identify, explain and clarify the key questions which need to be better understood in order to reason clearly about the particular issue, and to form effective policy regarding the issue.

Policy on Late Work:

It greatly benefits you to turn in your work on time, so that you stay current in the course and learn and grow more. Assignments are due at class-time on the due date. For scheduling reasons, and out of consideration to your classmates, your oral presentations and your term paper peer evaluation cannot be accepted late. For other assignments, I will grade with a 10% lateness deduction if turned in by 5:00PM on the due date. Following that, assignments will receive a further 10% lateness deduction for each school day that they are late.

Academic Integrity:

To ensure fairness across the class, the College academic integrity policies are enforced. Presentation groups may freely share information and ideas within the group and with me, and potentially with a tutor from the Writing Center. For all assignments other than group presentations, the work turned in must be your own, discussed only with me and potentially a Writing Center tutor. Please familiarize yourself with the College's academic integrity policies.

Regarding the use of generative AI tools such as ChatGPT, since a central goal of this course is to help you become independent and critical thinkers, you are discouraged from the extensive use of generative AI tools to create text as part of your work. If you do use AI-generated content in your assignments, you must clearly indicate via citation what work is yours and what part is generated by the AI. In such cases, no more than 20% of your work should be generated by AI. Any AI-generated work not cited and/or used for more than 20% of your assignment will be treated as though it were plagiarized. If any part of this policy on generative AI use is confusing or uncertain, please reach out to me for a conversation before submitting your work.

The Writing Center:

The Writing Center @ Roanoke College, located on the Lower Level of Fintel Library (Room 15), offers free tutorials focused on writing projects and oral presentations for students working in any field. Writers and presenters at all levels of competence may visit the Writing Center at any point in their process—including brainstorming, drafting, organizing, editing, or polishing presentation skills—to talk with trained peer tutors in informal, one-on-one sessions. The Writing Center is open Sunday through Thursday from 4 to 9 PM. Simply stop in, or schedule an appointment at www.roanoke.edu/writingcenter. Questions? Email writingcenter@roanoke.edu or call 540-375-4949.

Accessible Education Services:

Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Dustin Persinger, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact Dustin Persinger at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

Planned Class Schedule

Class	Date	Class Topic	Reading	Due
UNIT 1: Ethical argument and statistics				
1	Jan. 16	Introduction, ethical argument (relativism/objectivism)	Curtler 1: p. 1-39	
2	18	Principles/structuring of ethical arguments	Curtler 2: p. 40-127	
3	23	Justification of ethical claims; case studies	Curtler 3: p 128-158	
4	25	Uses and misuses of statistics; Case study (gun control)	Best A-F; videos	
5	30	Uses and misuses of statistics; Case study (cancer screening)	Best G-M; handout	
6	Feb. 1	Effective oral presentation	Cox Ch.1-8	Pres. topics
7	6	Presentation workshop		E-scholars lunch I
8	8	Oral Presentations		Peer Evals
9	13	Oral Presentations		Peer Evals
10	15	Work on Elderscholar presentation I (Dr. Robb out of town)		
UNIT 2: Nuclear power and energy policy				
11	20	Fukushima and nuclear power	Muller p. 9-25, 179-98	
12	22	Presentation I to Elderscholars		
13	27	Fossil fuels	Muller p. 77-111	
14	29	Alternative energy	Muller p.145-78, 219-46	
Spring Break				
15	12	Climate change	Muller p. 38-76	Pres. topics
16	14	Energy policy	Muller p. 291-305	E-scholars lunch 2
17	19	Oral Presentations		Peer Evals
18	21	Oral Presentations		Peer Evals
UNIT 3: Bio-engineering and bioethics				
19	26	Genetics 101 (video-making!)	Videos	
20	28	Presentation II to Elderscholars		
21	Apr. 2	Biotech/bioethics: Case study (Genetically engineered foods)	Handout	
22	4	Bio-engineering of organisms	Anthes 1: p. 3-55	
23	9	Bio-engineering of organisms	Anthes 2: p. 56-101	
24	11	Bio-engineering of organisms	Anthes 3: p. 102-142	Reflection on engagement w/ Elderscholars
25	16	Bio-engineering of organisms	Anthes 4: p. 143-181	Paper topic
26	18	Writing workshop		
	22	Rough draft due		Rough draft
	25	Peer review of draft due		Peer review
	30	Revised paper due (by end of Final Exam at 11:30am)		Revised paper

You are expected to spend at least 12 hours of work each week inside and outside of class.