HNRS 120 Science and the Good Life Spring 2026

Class Mtgs:	Lucas 110, MWF 1:10-2:10	Instructor:	Daniel Robb
Office:	Trexler 172D	Office Hrs:	T/Th 2:00-3:30
		(15 min appts via calendly.com/daniel_robb)	
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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 the field of artificial intelligence (AI) advances, AI systems can supplement human intelligence and in some applications surpass it, leading to changes in education and the economy. At the same time, technological developments in the field of genetic engineering enable us to alter organisms in novel ways. How should our ethical thinking be adapted as these two fields of AI and genetic engineering 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.

• *A Field Guide to Lies: Critical Thinking with Statistics and the Scientific Method***,** by Daniel J. Levitin, Dutton Publishers: Paperback (2019). ISBN-13**:** 978-0593182512

• *The Coming Wave: Technology, Power, and the Twenty-first Century's Greatest Dilemma*, by Mustafa Suleyman, Crown Publishers (2023). ISBN-13: 978-0593593950

• *A Crack in Creation*, by Jennifer A. Doudna and Samuel H. Sternberg, Mariner Books (2018). ISBN-13: 978-1328915368

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 watch videos 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. 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 genetic 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 participants.

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 activities which form part of the class participation grade. For an absence to be excused, due to illness or participation in a college-sponsored activity (see below), I must be notified before class. For each unexcused absence after the third, two points will be deducted from your final course average. 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.

The college's policy on excused absences for college-sponsored activities is as follows: Students who are absent from class to participate in a college-sponsored activity or to officially represent the college (e.g., intercollegiate athletic competitions, fine arts performances, scholarly presentations, etc.) shall be excused from

class without penalty with the following provisions: (1) Students must discuss the absence with the faculty member and provide documentation from the coach(es) or sponsor(s) as far in advance as possible. (2) Students are responsible for making up coursework and should discuss make-up procedures with the faculty member. (3) The faculty member will devise appropriate ways to address missed work and/or exams. Extended deadlines, substitute assignments, or make-up exams are some options to consider. (4) The student, faculty member(s), and coach(es)/sponsor(s) will collaborate to ensure that absences do not accumulate to the extenet that student learning is compromised (with absences limited to no more than 20% of class meetings, across all activities or absences for other reasons). Note that practices or meetings related to the college-sponsored activities are not considered official participation or representation, and so do not justify an excused absence.

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 peer evaluations.

Oral presentations:	30% (4 @ 7.5% each)	Term paper:	20%
Oral peer evals:	10% (2 @ 5% each)	Term paper (peer evals):	10%
Class blog entries:	10%	Brief oral reports:	5%
Participation:	10%	Reflection on engagement:	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 20-25 minutes, with 5 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 other group's presentation, using a supplied rubric and including 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 feedback 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. Comments should actively engage the issue and previous comments; they do not need to be polished, but they should be understandable and grammatically correct.

Brief oral reports: Each student will give at least one brief (1-2 minute) oral summary of reading material during class discussion. These will be evaluated for clarity and for usefulness to class discussion.

Class participation: You are expected to attend class and to be prepared having done the assigned readings. You are expected as well to listen and engage actively in class discussion and other class activities. You will also have two meals with your presentation group and Elderscholar 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 statistics and data plays an important role. We will investigate a couple of case studies of this type during the first unit. Your task will be to present arguments on both sides of the issue, explain how data and statistics are being used to support the arguments on each side, and comment on how the selection and presentation of numerical data affects the arguments surrounding the issue. You are encouraged to incorporate the suggestions and advice that emerge from your first lunch with your Elderscholars group in this presentation. The presentation should last 20-25 minutes, with 5 minutes for questions.

The second oral presentation will concern a specific aspect of artificial intelligence, its applications, and their effect on society. Your group can decide on what specific aspect you would like to focus on, subject to my approval. The presentation will draw on the background on artificial intelligence and its implications covered in our course reading, as well as incorporating principles of ethical argument. Again, you are encouraged to incorporate helpful advice that emerges from your second lunch with your Elderscholars group. The presentation should last 20-25 minutes, with 5 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 6-7 minutes, with 4 minutes for questions.

The written term paper will concern a focused topic related to genetic 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 and ethical considerations covered in the course reading, 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 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 Dr. Sandee McGlaun Writing Center and Subject Tutoring, located in the lower level of the Fintel Library (Room 5), offers free one-on-one support in writing, oral presentations, and course content such as Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, and Social Sciences. Open Sunday–Thursday from 4–9 PM, students can stop by or schedule through Navigate by selecting "Schedule an Appointment" → "Writing Center and Subject Tutoring" → "Writing Support" or "Course Tutoring" → preferred date and tutor. Contact subject_tutoring@roanoke.edu or 540-375-2590 for more information.

Accessible Education Services:

Accessible Education Services (AES) is located on the first floor of the Bank Building. 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 540-375-2248 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. The testing center, also located on the first floor of the Bank Building, can be reached at 540-375-2247.

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Class	Date	Class Topic	Reading	Due
		UNIT 1: Ethical argument & statistics		
1	Jan. 12	Introduction to the course		
2	14	Ethical argument: relativism/objectivism	Curtler 1: p. 1-39	
3	16	Principles of ethical arguments	Curtler 2: p. 40-75	
	19	**MLK Day: No class**		
4	21	Structuring ethical arguments	Curtler 3: p. 76-127	
5	23	Justification of ethical claims; case studies	Curtler 4: p. 128-140	
6	26	Case studies in ethical argument	Curtler 5: p. 141-158	
7	28	Evaluating numbers	Levitin: Intro, Part 1	
8	30	Evaluating words	Levitin: Part 2	
9	Feb. 2	Evaluating the world	Levitin: Part 3	
10	4	Case study (cancer screening)	Handout	Pres. topics
11	6	Topics; effective oral presentation	Cox 1	
12	9	E-scholars lunch I		
13	11	Effective oral presentation	Cox 2	
14	13	Oral Presentations I		Peer evals
15	16	Oral Presentations I		Peer evals
16	18	Oral Presentations I		Peer evals
		UNIT 2: Artificial Intelligence		
17	20	Technology and Containment	Suleyman 1-3	
18	23	The Technology of AI	Suleyman 4-6	
19	25	Presentation I to Elderscholars		
20	27	Incentives and government's role	Suleyman 7-10	
		Spring Break		
21	Mar. 9	Government's future role	Suleyman 11-12	
22	11	Steps toward containment	Suleyman 13-14	
23	13	Topics; review discussion		Pres. topics
24	16	E-scholars Lunch II		
25	18	Oral Presentations II		Peer Evals
26	20	Oral Presentations II		Peer Evals
27	23	Oral Presentations II		Peer Evals
		UNIT 3: Genetic engineering and CRISPR		
28	25	Genetics 101 activity	Handout (videos)	
29	27	Early gene editing	Doudna 1-2	
30	30	Presentation II to Elderscholars		
31	Apr. 1	The discovery of CRISPR	Doudna 3-4	
	3	**Good Friday**		
32	6	Applications of CRISPR	Doudna 5-6	
33	8	Ethical considerations	Doudna 7-8	Reflection re Elderscholars
34	10	Topics; review discussion		Paper topics
35	13	Writing workshop		
36	15	Writing workshop		
37	17	Writing workshop		Rough draft
38	20	Peer review workshop		Peer review
39	21	No class		
	25	Revised paper due (by 11:30 am)		Revised paper

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