INQ 120-X Science and the Good Life Spring 2018

Class Mtgs:	Trexler 263, T/Th 10:10-11:40	Instructor:	Daniel Robb
Office:	Trexler 266B	Office Hrs:	MWF 4-5, Th 2-4
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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.

Materials and Textbooks:

• *A Writer's Reference,* Hacker's custom Roanoke College edition.

• *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 (2013). ISBN-13: 978-0374158590.

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

Instruction in Oral Presentation:

A significant goal of INQ 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, we 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.

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 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. 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.

Attendance Policy:

You are expected to attend every class; you must 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 from class, I must be notified in advance. If 3 classes are missed without prior notification, then I will issue a warning; missing further classes will result in being dropped from the class 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 a missed 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 90-100, a "B" for 80-89, etc. You will receive rubrics describing how the oral presentations and term papers will be evaluated by me, as well as for use in the peer evaluations.

Oral presentations:	30% (2 @ 15% each)	Term paper:	25%
Oral peer evals:	10% (2 @ 5% each)	Term paper (peer evals):	10%
Class blog entries:	10%	Brief oral reports:	5%
Participation/reading quizzes:	10%		

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 20-30 minutes, with 10-15 minutes allotted for questions.

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 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 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 over the entire semester; 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 one-two brief (1-2 minute) oral summaries of topics from the reading during class discussion. These will be evaluated for their clarity usefulness to class discussion.

Class participation/quizzes: You are expected to attend class consistently, and to be prepared having done the assigned readings. There will be one (unannounced) reading compreshension quiz during each unit, for a total of three during the semester. You will be expected to listen and engage actively in class discussion.

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. The presentation should last 20-30 minutes, with 10-15 minutes set aside for questions.

The second oral presentation will concern a specific issue facing our nation and the world: the future of nuclear power and other energy sources following the disaster at Fukushima in March 2011. 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, the presentation should last 20-30 minutes, with 10-15 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 addressed and/or better understood in order to reason clearly about the particular issue, and to form effective policy regarding the issue.

Policy on Late Work:

I will grade an assignment 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 additional 24 hours that they are late.

Academic Integrity:

The College academic integrity policies are vigorously enforced. Although you are encouraged to work in groups on your homework assignments, all work turned in for a grade must be your own. Please familiarize yourself with the College's academic integrity policies.

Disability Support 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 Dr. Sue Brown, Director of Academic Services and Acting Coordinator of Accessible Education Services, at 540-375-2247 or by e-mail at sbrown@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 Dr. Brown at your earliest convenience to schedule an appointment. You need to discuss your accommodations with her before they can be implemented.

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; presentation workshop	Cox Ch.1-8	Pres. topics
7	6	Oral Presentations		
8	8	Oral Presentations		Evals
9	13	Oral Presentations		Evals
		UNIT 2: Nuclear power and energy policy		Evals
10	15	Fukushima and nuclear power	Muller p. 9-25, 179-98	
11	20	Fossil fuels	Muller p. 77-111	
12	22	Climate change	Muller p. 38-76	
13	27	Alternative energy I	Muller p. 145-78	
14	Mar. 1	Alternative energy II	Muller p. 219-246	Pres. topics
		Spring Break		
15	13	Energy policy	Muller p. 291-305	
16	15	Oral Presentations		
17	20	Oral Presentations		Evals
18	22	Oral Presentations		Evals
		UNIT 3: Bio-engineering and bioethics		
19	27	Genetics 101 (video-making!)	Videos	Evals
20	29	Biotech/bioethics: Case study (Genetically engineered foods)	Handout	
21	Apr. 3	Bio-engineering of organisms	Anthes 1: p. 3-55	
22	5	Bio-engineering of organisms	Anthes 2: p. 56-101	
23	10	Bio-engineering of organisms	Anthes 3: p. 102-142	
24	12	Bio-engineering of organisms	Anthes 4: p. 143-181	Paper topic
25	17	Human enhancement	Handout	
26	19	Writing workshop		
	20	Rough draft due		Rough draft
	23	Peer review due		Peer review
	27	Revised paper due		Revised paper