

US275 Scientific Ethics
Final Project

**Group Debate on the
Ethics of a Scientific Dilemma**

“The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.”

~Isaac Asimov

The final project for the US275 Scientific Ethics course is a group exercise to study and present an ethical dilemma posed by a scientific controversy. This will take place as an asynchronous written debate in which the members of the group will provide their classmates with the scientific background necessary to understand the basis for the conflict. The members of the group will then prepare a series of arguments to convince their classmates to either accept or reject a proposed resolution to address the ethical dilemma.

“Science without religion is lame, religion without science is blind.”

~Albert Einstein

	Final Project	% possible	% received	Due Date
	Topic Selection	1		6/18
	Scientific Background (draft)	1		7/2
	Scientific Background	3		7/9
	<i>Debate Brief: First Constructive Dialogue</i> (draft)	1		7/11
	<i>Debate Brief: First Constructive Dialogue</i>	3		7/16
	<i>Debate Brief: Second Constructive Dialogue</i> (draft)	1		7/18
	<i>Debate Brief: Second Constructive Dialogue</i>	3		7/23
	Rebuttal (draft)	1		7/25
	Rebuttal	3		7/30
	Individual contributions to group project	--	--	7/30
	Commenting on other debates	4		8/6
	TOTAL:	21		

“Science cannot resolve moral conflicts, but it can help to more accurately frame the debates about those conflicts.”

~Heinz Pagels

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There are three major types of scientific controversies.

1. ***Falsifiable Propositions:*** The first is whether or not the scientific evidence supports a given hypothesis. At a basic level, the argument over whether or not climate change is the result of human carbon emissions is in this category. Scientific challenges against Einstein's Theory of Relativity or Cold Fusion are other examples. These types of controversies require the use of the scientific method to challenge the predictions of each hypothesis to determine if the observations from a series of experiments will support one or both of the hypotheses or if the results will cause the rejection of one of the hypotheses. *These types of controversies will not be addressed in this assignment.*
2. ***Incommensurable arguments:*** The second type of scientific controversy involves the implied conflict between a scientific viewpoint with a different and non-scientific perspective. Commensurable objects or qualities can be compared or evaluated using a set type of rules or standards. Incommensurable objects may have certain basic similarities but have inherent differences that do not allow for a direct comparison (example comparing apples to oranges). An example of an incommensurable controversy is the differences between astronomy (the study of the composition or movement of the stars) and astrology (the study of the effect of stars and planets on personal events). *These types of controversies will not be addressed in this assignment.*
3. ***Ethical Dilemmas:*** The final type of scientific controversy is whether or not something that is scientifically or technologically possible should be done. These types of complex decisions are difficult to resolve because they involve conflicts between moral imperatives. These types of concerns do not focus on whether or not something is or is not possible, but whether or not it should be permitted. Examples of this type of controversy are things such as "Should stem cells be used to treat Parkinson's disease," "should gene therapy used to change inherited traits," or "should nuclear energy replace fossil fuels in the production of America's electricity." *It is this type of scientific controversy that will be examined in this debate assignment.*

"Science has made us gods even before we are worthy of being men."

~Jean Rostrand

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Debate (dĭ-bā't): a formal discussion between two sides considering opposing arguments for a given proposition

In a debate, there are two opposing individuals or teams that will try to convince an audience or judge to accept their viewpoint. The focus of a debate is introduced as a specific resolution or motion. This resolution generally proposes doing something (such as mapping the human genome) or changing a specific policy (such as insurance companies should be allowed to use an individual's genetic information to determine insurance costs).

The proponents of the resolution will argue that the resolution should be accepted. In order to be convincing, the debaters must present supporting facts backed by evidence and references in a logical manner to convince the audience to accept their affirmative viewpoint.

The opponents to the resolution will argue that the resolution should not be accepted. The negative point of view normally focuses on maintaining the status quo. Similar to the proponents, those opposing the resolution will need to present supporting facts backed by evidence and references in order to convince the audience to accept their viewpoint, reject the affirmative viewpoint, and not support the resolution.

The audience or judges will evaluate the arguments being made for and against the resolution. The Latin phrase *pro et contra* has been used since at least the 16th century and represents the arguments "for and against" a specific choice. These individuals will weigh the "pros and cons" in order to make an informed decision about the resolution.

There are a variety of debate styles. The one used in this assignment is similar to the Lincoln-Douglas debates since there will be no definitive right or wrong answer to resolving the controversy, so it will be necessary to try to address the topic using available facts and moral values. Sometimes historical precedent can be used in these types of debates, but there are examples where the historical precedent is overturned by society (example: slavery). In this debate assignment, each group will attempt to build a compelling argument that will convince the judge's/audience to support or reject the resolution.

"Science investigates, religion interprets. Science gives man knowledge which is power; religion give man wisdom which is control. Science deals mainly with facts; religion deals mainly with values. The two are not rivals. They are complementary."

~Martin Luther King, Jr.

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A. Debate Topic Selection (Due June 18):

In this assignment, students will form a small group of 4 – 5 individuals that will complete the entire debate process as a team. The partners for this group assignment do not need to be a member of your small group. You can explore topics and find other partners interested in the same topic in the Cyber Café forum “Debating dating service.” The team will select a specific scientific topic. Ultimately two or three members will focus on supporting a resolution, while the other two or three members of the group will take the opposing viewpoint.

The specific assignment for this week is for each group of students to:

1. Each student should post their choice of debate group in the Discussion Board/Final Project-Debate Topic choice thread. Indicate whether they will be a proponent (arguing in support of the debate topic resolution) or opponent (arguing against the debate topic resolution).
2. Decide upon a desired topic and prepare a short 50 word description of the topic.
3. Should send their suggested debate topic to the course instructor for approval. The proposal should include:
 - a. Proposed title of debate
 - b. 50 word description of the debate
 - c. Resolution stating the position to supported by the proponents in the debate.
 - d. Proponent: Names of the students arguing for the resolution
 - e. Opposition: Names of the students arguing against the resolution
4. Upon approval from the course instructor the students will go into the discussion board and create a new thread in the large group (Discussion boards) under “Asynchronous Debates.”
 - a. ***Title of the debate*** should be posted in the subject line
 - b. ***50 word description of the debate, the resolution, and the names of the proponents and opponents*** should be posted in the body of the message.

The topics will be assigned on a “first come: first served-basis.” Each team of students will work with a unique topic, so the longer you wait to get your topic approved the greater chance that someone else may choose it first.

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Scientific Background (Draft due July 2; final due July 9)

As a group, your debate team composed of proponents and opponents to the resolution will prepare a short (3 – 4 paged, double-spaced) explanation of the scientific issues involved in their topic.

This information should provide an introduction to your science involved in your topic to your classmates who will be reviewing the debate.

The draft of this assignment should be submitted to the instructor for feedback by July 2.

The final scientific background should be posted as an attachment in the Course Discussion board under “Asynchronous Debates: Your topic” in a message entitled “scientific background.” By July 9

Debate Brief - First Constructive Dialogue (Draft due July 11; final due July 16)

Each side of the debate will post a short statement (250 – 549 words) arguing for the readers to agree with their position and support or reject the resolution. Review the instructions and grading rubric for debate briefs attached to this assignment.

The draft of the first constructive dialogue should be submitted as an attachment to the course instructor for feedback by July 11.

This first constructive dialogue will be copy/pasted as a comment in the debate discussion thread by July 16. The message should be posted under “Asynchronous Debates: Your topic” in a message entitled “Proponent First Constructive Dialogue” or “Opponent First Constructive Dialogue” in the subject area.

Debate Brief - Second Constructive Dialogue (Draft due July 18; final due July 23)

Each side of the debate will post a short statement (250 – 549 words) arguing for the readers to agree with their position and support or reject the resolution. Review the instructions and grading rubric for debate briefs attached to this assignment.

The draft of the second constructive dialogue should be submitted as an attachment to the course instructor for feedback by July 18.

This second constructive dialogue will be copy/pasted as a comment in the debate discussion thread by July 23. The message should be posted under “Asynchronous Debates: Your topic” in a message entitled “Proponent Second Constructive Dialogue” or “Opponent Second Constructive Dialogue” in the subject area.

Debate Brief - Rebuttal & Closing Statement (Draft due July 25; final due July 30)

Each side of the debate will post a short **rebuttal** (250 – 549 words) in response to the arguments made by the other side in their first and second constructive dialogues. At this stage you should NOT be introducing more arguments in support of your position, but either strengthening arguments that you have already made or countering arguments made by the other debater. Review the instructions and grading rubric for debate briefs attached to this assignment.

You should also summarize your overall argument in the debate in a **closing statement** and call for the readers to accept your viewpoint and accept or reject the resolution.

The draft of the rebuttal and closing statement should be submitted as an attachment to the course instructor for feedback by July 25.

This rebuttal and closing statement will be copy/pasted as a comment in the debate discussion thread by July 30. The message should be posted under “Asynchronous Debates: Your topic” in a message entitled “Proponent Rebuttal and closing statement or “Opponent Rebuttal and closing statement” in the subject area.

Individual Contributions to group projects (to be completed by July 30)

In order to appropriately assess the individual contributions and group effort, each student in the group should assess their own contributions and the contributions of each of the other group members on each of the final group projects. Use the assignment rubric to give yourself and each group member a score from 0 – 9 on each group assignment.

Commenting on other debates (to be completed by August 6)

This is an individual, rather than group assignment. Each student will

1. Read through **ALL** of the Asynchronous debates.
2. Post comments to **EACH** of the different debates. Your response should indicate:
 - a. Whether after reading through the entire debate you support or reject the resolution.
 - b. What part of their presentation was the strongest in helping you make your personal decision to support or reject the resolution?

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Debate Brief: A debate brief is an outline that organizes important information into “essential argumentative elements” that may be used in the discussion. The discussion brief should be prepared using the following format.

Introduction: The introduction is a short paragraph to gain the audience or judge’s attention and indicate the importance of supporting (or rejecting) the resolution of the topic of the debate.

Resolution: The resolution is a specific and direct statement about what should be done to address the topic of the debate. (Example: The United States federal government should...)

Definitions of Key Terms: It is important that both sides of the debate and the audience understand the meaning of the terminology that will be presented in the debate. Ideally the use of jargon will be kept to a minimum. It is not necessary to define terms that the audience should be aware of and points that both sides of the debate agree on. These only need to be defined at the beginning of the debate or if questions or disagreements on the definition develop.

Three to five Main points: Affirmative briefs will have scientific and philosophical justifications for how and why adopting the resolution will address the problem. Negative briefs will explain why the current policy or situation is not flawed and should not be changed using similar but opposing scientific and philosophical justifications. The format of the main points should be:

Each main point or argument should be presented in a single paragraph using the ARE (assertion, reasoning, evidence) approach. An assertion is a well-constructed topic sentence in the form of a statement supporting the resolution that should be formatted in bold font. The remainder of the paragraph should provide a brief reasoning of why the assertion is importance to adopting (or rejecting) the resolution backed by supporting evidence.

Conclusion: Summarize the brief with a short restatement of position emphasizing key points and requesting the audience or judges support for the position.

Debate Brief Rubric					
	4	3	2	1	Score
Assertion logically and relevantly linked to topic	Always	Usually	Rarely	Does not	
Reasons: facts to support assertion	Uses many	Uses some	Uses few	Does not	
Evidence: provides valid sources of facts	Always	Usually	Rarely	Does not	
Main points are strong and compelling	Always	Usually	Rarely	Never	
Overall presentation was convincing	Always	Usually	Rarely	Does not	