

**CHE 125: Science and Public Policy** (Syllabus subject to change by instructor)

January 2009

Lecture: M T W R F 10:30-12:20, VH 204

**Instructor**

Dr. Steve Miller

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If you have a learning (or other) disability which could affect your performance in this course, please see Laurie Bickett (x6286 or lbickett@gustavus.edu) in the Academic Advising Center. She will work with you to determine any accommodations which might benefit you, and I will be more than happy to implement them.

**Catalogue Description**

This course will provide an introduction to some important modern scientific concepts (e.g. cloning) which are important in current public policy debates. Students will research various aspects of each topic, and their findings will be used as the basis for in-class discussions/debates. Students will be exposed to basic scientific background information in a number of disciplines (chemistry, biology, physics), as well as how scientific arguments may combine with philosophical/religious ideas to form public policy. The content of the course is intended to be equally accessible to students with scientific and non-scientific academic interests.

**Course Goals**

- 1) Examining different aspects of current public policy debates in regards to scientific/technological topics
- 2) Finding and evaluating scientific information, some of which may have a political and/or social bias
- 3) Learning how to effectively construct science-based public policy
- 4) Promoting awareness about the scientific foundations of public policy debates

**Required Materials**

None; handouts and other reading material will be made available on the course website: [homepages.gac.edu/~smiller3/125-j09.htm](http://homepages.gac.edu/~smiller3/125-j09.htm)

Students will also be asked to find (and sometimes provide) pertinent information about topics discussed in class.

### **Attendance**

I will not take attendance every day, nor will attendance directly impact your course grade. However, attending class every day is strongly encouraged. Your grade will be partly determined by presenting material to the entire class and participation in discussions/debates. You will receive no credit for either on days you are absent.

### **Grading**

Final grades will be assigned according to the following scheme:

Group presentations of material	20%
Group papers for each assigned topic	25%
Participation in class discussions	15%
Individual reaction papers	35%
Group assessment	5%

The maximum percentages for letter grade cutoffs will be 90% (A-), 80% (B-), 65% (C-), 55% (D), <55% (F); the actual cutoffs may differ slightly (they will never be raised, only lowered), and will only be determined after the entire course is completed. Any student who has chosen to be graded on a pass/fail basis will pass if he/she has earned at least a C-.

Half of your course grade will be determined on an individual basis, and the other half will be the result of group work. I will assign groups of 4-5 members on the first day of class; your groups will remain the same for the duration of the class. I will generally leave it to each group to determine how best to work together and/or delegate tasks within the group. In the event that a member of your group is consistently failing to do his/her share of the assigned work, I may meet with the group to help facilitate a resolution to the problem.

### **Group presentations**

Each topic we discuss will be broken down into several subtopics (e.g. cloning might be broken down into the scientific basis of cloning, bioethics, theological views on cloning, etc.). Each group will be assigned one of the subtopics and will be given a few days (typically 2-3) to find information about the assigned subtopic, which you will then present to the entire class. You may present your information in any manner you see fit (if you would like copies, please email me original copies by no later than 8 am on the day of your presentation). A presentation grading rubric will be available on the course website.

### **Group papers for each assigned topic**

In addition to the in-class presentations, each group will be expected to summarize their findings in written form. Paper copies of your group reports will be due in class on the day following your presentation (*a second copy is to be emailed directly to me*), and will be graded on content as well as grammar/spelling/etc. Papers submitted late will be docked 15% per day. There is no set length for group papers, provided that you adequately cover the assigned material. A rubric for group papers will be available on the website.

### **Participation in class discussions**

One of the major objectives in this course will be to understand how policy debates play out in the public arena. To better appreciate this dynamic, after each group has presented its material to the entire class, the entire topic will be discussed/debated by the class as a whole. I may simply let the discussion/debate play out naturally, or I may ask individuals/groups to promote a specific side of the debate (regardless of each individual's actual feelings about the topic of the day). Your participation grade will be determined primarily by the quality, not necessarily the quantity, of your contributions. This does not mean that you should not contribute as often as you are able, nor that you should be afraid to contribute because you do not think what you have to say is worthwhile. Rather, it means that I want each person to add something useful to the debate rather than saying idle/random things in order to "participate".

### **Individual reaction papers**

After the presentations and debates, you will be expected to write a reaction paper about the topic. The purpose will be to state your opinion on the topic (i.e. what you believe our public policy should be), why your opinion is what it is, and how (if at all) your feelings about the topic have changed after learning more about it. Your grade will be determined by:

- 1) how clearly your opinion is stated
- 2) how well you support your opinion with facts you have learned (in your group work or by other groups)
- 3) the quality of your writing (spelling, grammar, structure, etc.)

*Please be aware that you will **never** be graded on **what** your opinion is, but only on the criteria above.* A rubric will be posted on the website for grading the reaction papers. Due dates for reactions will generally be 1-2 days after the topic is discussed/debated in class and will be docked 15% per day late. As with the group papers, you will be expected to both submit a paper copy and *email me a copy*.

### **Group assessment**

At the end of the course, each student will be asked to submit a critique of his/her group members (a copy of which will be posted on the website). Essentially, each student will grade the remaining members of his/her group on their contributions to the group's effort as a whole. The results will be averaged for each student to determine the group assessment portion of his/her grade.

### **General Expectations**

1) I will try to treat every student with respect. In return, I expect each student to treat me and all of his/her fellow students with respect. In particular, I will ask that everyone is quiet while another person is talking (*especially* during debates/discussions). While I encourage you to have lively discussions, it is imperative that each and every person is allowed equal time to speak.

2) **All mobile devices are to be turned off during class.** There is nothing more distracting than a phone ringing during class or a nearby person constantly text messaging. All devices should be turned off, not just set to silent or vibrate.

3) I expect you to adhere to the personal code of conduct each GAC student is required to sign; for this class, this is especially important with regards to plagiarism. I expect that everything you submit is original work by you and/or your fellow group members.

**Academic dishonesty will not be tolerated under any circumstances.** Any individual or group caught cheating will receive an automatic grade of zero for the paper in question. A second offence will result in immediate removal from the course with an automatic F.

4) Writing a coherent, well-reasoned argument is essential to a meaningful contribution in a public policy debate. Therefore, you are expected to write in a clear and concise manner, using proper grammar, spelling, sentence structure and paper structure (and you will be graded on these aspects of your writing). I will go over these expectations on the first day of class, and will provide one or more examples of good writing for you to emulate.

5) I will post several items on the course website over the span of the four week class. If you are ever looking for something, check there. Contact me if there is something you would like to see posted and is not.

6) There are any number of sources you may use when doing research (primary literature, news/media outlets, websites, etc.). However, it is imperative that you not only find information on your assigned topics, but that you find good information and/or evaluate how reliable the information is. Again, I will discuss this in further detail in class. Generally, poor research leads to poor information, which in turn leads to poor grades. If ever you would like help finding useful info, ask! You may seek assistance from me, Molly, and/or the librarians.

### **Some tips for writing well (for a scientific or technical paper)**

Science and/or technical writing should be concise, straightforward and well reasoned. Here are some tips for writing an effective science/technical paper (although this is by no means an exhaustive list):

1. Each sentence should be properly structured. Avoid run-ons, which are sentences that do not end, and they just keep going, with no apparent end in sight. And incomplete sentences.
2. Each paragraph should be properly structured (see this paragraph as an example). The first sentence should state a main idea you wish the reader to know/understand. Ensuing sentences should offer support for the main idea (including references as appropriate). The final sentence should restate the main idea in light of the supporting statements and/or draw an interesting conclusion about the main idea. Poor paragraph structure is probably the single most common mistake students make!
3. Each paper should be properly structured. Ideas should be presented in a logical order which is easy for the reader to follow. If appropriate, the paper can be broken up into sections, each of which has its own similar structure.
4. Use punctuation correctly (especially commas, colons and semicolons). Commas should be used to separate items which are not complete thoughts by themselves (ex. Common pets include dogs, birds, cats and fish). Semicolons should be used to separate related ideas which are complete sentences by themselves (ex. Dogs are the most widely kept type of pet; birds, cats and fish are also common pets.). Colons should be used before listing multiple items which do not flow naturally in the sentence (ex. The following are common types of pets: dogs, cats, birds and fish).
5. Never use slang or chat/text-speak; it has to be the most unprofessional looking thing you can do in formal writing.
6. Always use proper grammar and spelling.
7. Use a clear and concise writing style which avoids being overly wordy; do not include needless filler material. For example, consider "This sentence is to-the-point." compared to "This sentence is to-the-point; it does not contain a lot of superfluous words which add nothing substantive to the idea being presented."
8. Avoid statements which are grandiose (ex. "The authors have apparently made the most important discovery in the history of mankind."), cutesy (ex. "The results tickled the authors' collective fancy like a kitten playing with a ball of twine."), dramatic (ex. "If we build more nuclear power plants, the world could end in one gigantic nuclear fireball.") or unsubstantiated (ex. "The earth will be sucked into a black hole if CERN's Large Hadron Collider is turned on.").
9. Avoid the use of questions (whether rhetorical or not). Do not ask "Why did the authors choose to study ethanol production?"; state "The authors studied ethanol production because...".
10. One should generally write in the third person (he, she, it, etc.). Use the first person (I, we, me, us, etc.) only if explicitly describing actions you have taken. Never use the second person; use "one" if telling the reader something about his/her actions. For example, do not say "Then, you should add the sugar to the flour."; rather, say "Then, one should add the sugar to the flour."
11. Be sure to use proper subject-verb agreement (ex. "The animal was eating." vs. "The animals were eating.").

12. Also be sure to use proper noun-direct object agreement (ex. "A person should always have their driver's license when in the car." vs. "A person should always have his/her driver's license when in the car.>").
13. Effective writers employ an active voice. Passive voice is used by less effective writers.
14. Know the difference between some common homophones (such as its vs. it's, your vs. you're, or their vs. they're vs. there), and use them properly. For example, "its" is the possessive form of "it" (ex. A dog is always eager to eat *its* dinner.) while "it's" is the contraction of "it is" (ex. A dog is always eager if *it's* dinner time.).
15. Do not use contractions (can't, it's, isn't, etc.).
16. Spell out numbers between one and ten; only use numbers when writing numbers of at least 11 (such as 235). Also, always spell out a number which begins a sentence. Ninety percent of people make this common mistake.