Research Paper and Presentation
ESGN451 Microbial Processes

The goal of this project is to investigate a microbial process or suite of processes that you: 1) perceive to be important, 2) find interesting, and/or 3) would like to investigate more deeply than we will in class. The project can be a fundamentals-based analysis of a microbial process(es), and/or a model of process(es).

The final products of your research will be a 15-minute presentation and a 10±2 page summary of your findings. The written report and oral presentation are each worth 15% of your grade. The presentations are scheduled to occur during the class periods on April 29, May 1 and during scheduled final exam slot during the week of May 5th; the written version must be turned in to me as a hardcopy and electronically as a word file on or before Wednesday May 7.

This project requires research to find and develop information, a quantitative analysis of fundamentals and/or modeling, and a clear presentation of that information. In both final products, you should:

- state your purpose (hypothesis) clearly
- present a summary of your findings
- draw one or two major conclusions
- recommend additional work to improve understanding

Your products should be directed to educate and inform your classmates.

Grading for both products will be based on both content and presentation for these 5 equally weighted criteria:

1. Conclusion--based on the quality of the conclusion drawn
2. Support--concerning formulation of the evidence used to draw the conclusion
3. Doubt--concerning the level of confidence in the conclusion
4. Recommendation--concerning recommendations drawn from the conclusion
5. Explanation--concerning the technical basis for the conclusion

No specific format is required for the paper. You should be able to find multiple useful references, and you must cite your references!! You are welcome to use internet sources but assess the information carefully (sites are often not carefully reviewed, unlike most technical journals). For guidelines on citing Web references, see http://www.columbia.edu/cu/cup/cgos2006/basic.html.

If you are looking for help with technical writing, I encourage you to work with the LAIS Writing Center (311 Stratton Hall; 303-273-3085 for appointments) to make your paper as strong as possible--that's why they're there! See http://www.mines.edu/Academic/lais/wc/ for more information, including tutorials and hours.

Each student will be allotted a total of 15 minutes for the presentation. At the end of the talk, 5-10 minutes will be allotted for questions from the audience. A computer projector will be available for use in the presentation. Graphics must be professionally prepared.

A suggested format for the presentation is outlined below.

1. Introduction: title, objectives, relevance
2. Background: microbes involved, governing reactions, working equations, sample calculations
3. Discussion: detailed findings, comparison with data or theory, error analysis, statistical results, interpretation of findings
4. Conclusions: recap of important findings, recommendations on how to improve understanding further.