

There will be two exams (middle term and final) in this course. There will be a synthesis paper of student choice. You will be required to turn in a draft, followed by the final paper. The draft will be critiqued and returned to you prior to writing the final paper. In addition, a brief topic description will be required for the synthesis paper. You will be expected to give an oral presentation, near the end of the semester, on your synthesis paper. There is a list of topics in this syllabus.

Exams will consist of a combination of essays, short answer questions, and multiple choice questions, and will be a take home exam.

Middle term exam: 30 points,
Final exam: 30 points,
Synthesis paper: 30 points,
oral presentation on synthesis paper: 10 points,
Assignments: 50 points at 5 points each.
Total points for the class: 150 points

Honor Code

The UAF Honor Code will be enforced in this class. The UAF Honor Code is as follows:

- 1.

NRM 685, Soil Biology

General Course Outline

| | Topic |
|------------------------------------|-----------------|
| Week 1 Lecture 1, 2 8/29-9/2 | Introduction of |

Assignment 10: Forms of F7rga

Synthesis and technical report for NRM 685

The purpose of the NRM 685 written synthesis paper is to give you a chance to research a topic in more detail than will be done in class and to gain practice in synthesizing information from the class and the literature. The paper should be on a topic of interest to you and related to soil biology. I have included a list of example topics at the end of this file; you are **NOT** required to use a topic from the list. Papers will be graded on coverage of topic (i.e. adequate coverage without excess detail), accuracy of information presented, appropriateness of references, organization, ability to discuss the pertinent information from the literature and synthesize it into a coherent body of information, and quality of presentation (how well it is written, including spelling and grammar). A brief (1/2 page) topic description will be due on Week 5. I will use this to determine if your topic seems reasonable for a synthesis paper and if it is appropriate for this class. You should turn in a draft by Week 8. I will critique the draft, and then return it to you with comments and suggestions for improvement. The final paper will be due on Week 16.

The main purposes of the topic description are to help you focus on your topic early in the semester and to help me decide if your topic is appropriate for the class and if it is doable. It should simply be a short description of what you plan to write your paper on. Some time should have been spent searching the literature prior to writing the topic description. At least three references should be included with the topic description.

The paper should **not exceed five pages** (line spacing: 1.5, font size: 12) in length. **At least eight pertinent references** should be cited in the paper; **at least five of them must be from the peer reviewed literature**. Internet sources are acceptable, but must be credible. The internet can be a good source of information, but there is also a lot of bad information on the internet and much of it is unverifiable. I urge you to use care if you use it. **Wikipedia or You-tube are not acceptable references for this class**. If you have trouble finding information, please feel free to contact me. My phone number is 474 7620, fax number is 474 7004, and e-mail address is mzhang3@alaska.edu

You should list all references cited in a section called Reference List or Literature Cited. This section should be placed at the end of the report. Proper formats for references are given below. Please follow these formats for citing and listing

Examples of Publications in Reference List or Literature cited (should be alphabetical)

The publication types listed below are the most commonly cited in papers in soil science and related fields. Many other types of publications exist. If you have questions about citation style, please see me.

Single author in journal:

Clay, D.E. 1997. Comparison of the difference and delta ¹⁵nitrogen approaches for evaluating liquid ammonium nitrate utilization by maize. *Communications in Soil Science and Plant Analysis* 28:1151-

Suggested topics for term paper (NRM 685 Soil Biology)

- 1) Pesticide decomposition in soil (if you pick this topic, you should choose a specific pesticide or class of pesticides; otherwise the topic will be too broad).
- 2) Effect of heavy metals on soil microbial activity.
- 3) Effect of management practices (pick one, such as tillage, crop rotation, application of pesticides, many others) on soil microbial biomass and activity.
- 4) Effect of management practices (pick one, such as tillage, crop rotation, afforestation, others) on carbon sequestration in soil.
- 5) Microbial transformation of metals (you should pick a particular metal or class of related metals).
- 6) Biodegradation of organic contaminants in soil (if you choose a topic similar to this one, you will want to narrow it, maybe by picking a particular compound or class of compounds).
- 7) Probable effects of climate change on decomposition of forest litter in subarctic environments.
- 8) Microbial activity under snow or in frozen soil.
- 9) Mineralization and nitrification of nitrogen in sewage sludge.
- 10) Role of nematodes in controlling bacteria populations in soil.
- 11) Role of nematode trapping fungi on soil ecosystem function.
- 12) Soil enzyme activities and environmental impact (choose one of nitrogenase, phosphatase).
- 13) Transgenic genes in soil and their impact on soil ecosystems.
- 14) Soil impact on prion proteins (mad cow disease causing protein).
- 15) Advances in using genomic technologies in study soil microorganisms.