

Agronomy 585
CREATIVE COMPONENT

Students who take Soil & Environmental Microbiology as 585 are expected to complete 485 (lecture and laboratory) plus do a creative component.

With the creative component, you will have an opportunity to thoroughly develop an interest area. The only requirement is that the topic you choose be outside your research area and deal with some aspect of soil microbial ecology, soil microbiology, environmental microbiology, or soil biochemistry. You will have three options for the creative component: a) a "hands-on" project in the laboratory, b) an extensive literature review article, or c) a research proposal. You need to choose your area of study by **the end of the second week of September** and you will need to submit a preliminary proposal or a general outline (10 points).

A. Laboratory Project

The main purpose of the laboratory project is to allow you an opportunity to conduct a mini-study of your choosing.

1. Preliminary Proposal (10 points): This is a general description of the problem. A few references also should be given to support your thinking in formulating the problem. The objectives, procedures, and the anticipated results also should be given.

You should include a discussion of how you propose to attack the problem, using, if appropriate, published procedures. Also, you will need a listing of materials, supplies, and reagents as well as a proposed time schedule for completing the work. Remember, keep your problem relatively simple--it usually takes twice as much time in the laboratory to complete a project as planned.

During work on your project, you will be responsible for making your own media and special reagents. I will be happy to give you assistance on how to prepare the media, use of the autoclave, etc. You will be responsible for your own laboratory cleanup. Room 2526 in Agronomy Hall will be available for your use, or you may use your own research laboratory.

2. Finished Product (240 points): After you have completed your research, you will need to write a paper in suitable format for publication in Soil Science Society of America Journal (or another journal of your choosing--you will need to specify the journal). You will need an abstract of your findings, an introduction including a short literature review, methods and materials, results and discussion, summary, and literature cited.

B. Review Article

The main purposes of the review article are to allow you an opportunity to gain an in-depth appreciation for one specific area from the published literature and to develop your writing skills.

1. General Outline (10 points): By the end of the second week of September, you will need to turn in your topic and an outline of the headings you plan to include in your review article. Cite several of the important literature sources that you plan to use. This is an initial outline and may be changed later as you get further into the literature.

Be careful to avoid overly broad topics. Broad areas are too difficult to thoroughly evaluate the existing literature. For example, an overly broad topic would be "Pesticides Degradation in Soil." The only requirement for the topic is that it deals with some aspect of soil microbiology, environmental microbiology, or soil biochemistry. If two people choose the same topic, it will go to the person who first contacts me.

2. Written Review (240 points): Please plan to write a review article as if it were being submitted for publication in a scientific journal (please see me if you wish to review an example). Please include your general outline at the beginning of the article and literature citation at the end. Because different topics will vary in the amount of material available, it is difficult to suggest a page length. Because this will be a major contribution, however, it is anticipated that the article should contain at least 25 pages of double-spaced typing.

C. Research Proposal

The main purpose of the research proposal is to provide you with experience in formulating a research idea and then developing the idea to the extent that a funding agency will provide support.

1. General Outline (10 points): By the end of the second week of September, you will need to turn in your research idea with a brief summary of the thinking (or previously research) leading to your proposal. Cite several of the important literature sources that you plan to use as a base for your proposal. The actual details may be changed later as you get further into your proposal development. Please indicate the proposed funding agency if not NSF.

Ideally, you will propose a novel approach to solving or approaching a researchable question. You will need to give adequate background from the existing literature and present a brief project description. The only requirement for the problem is that it deals with some aspect of soil microbiology, environmental microbiology, or soil biochemistry outside of your direct research interests. If two people choose the same topic, it will go to the person who first contacts me.

2. Written Review (240 points): The proposal should follow the guidelines for "NSF Proposal Format" (guidelines are available on the Web). Alternatively, you may use the guidelines offered by another granting agency--you will need to specify the agency. The NSF guidelines included the PIs Information Page (signatures not required), Table of Contents, Project Summary, Project Description, Bibliography, Biographical Sketch, Budget, and Budget Explanation. The guidelines outline the specific requirements for each section.

Due Date Summary

A. End of 2nd week of September

Creative Component Plans due

B. Friday before Finals Week (or before)

Written work due

I hope that you find the creative component a worthwhile part of Agronomy 585. I think you will enjoy the experience and find it informative.