

MBIO4480: ADAPTED LAB OUTLINE (2022)

Instructor: Dr. Damien Rivers

Contact: damien.rivers@umanitoba.ca

Time: 2:30pm Fridays

Location: Zoom meeting (links will be provided on UMLearn)

Welcome to the MBIO4480 “lab”. This year we are not allowed to hold in-person instruction for this course. Instead of a traditional lab, you will be doing a series of assignments. For each assignment there will be a brief “Live Zoom” introduction to the assignment. The goals of these assignments will include learning how to do basic calculations and make conclusions from old data sets, learning experimental design, and improving your scientific writing skills. The introductions to these assignments will be brief but mandatory, and delivered in a synchronous fashion in the scheduled lab time slot (see schedule below). On occasion pre-recorded videos may be used to supplement the live “labs”.

Please note: I am always happy to do small group or 1-on-1 zoom sessions if students have any questions about any of the assignments.

The outline for the “lab” section is as follows:

Assignment #1 – The effect of human interactions with soil on soil microbial communities.

Each group will pick a specific topic under the above general theme and write a review article on the subject (ex. heavy fertilizer use, effect of petroleum spills, effects of increased temperature due to climate change etc.)

Objectives:

- Learn how to conduct a literature review on a subject
- Improve scientific writing skills

Format: Group assignment (3-5 students)

Live meeting: Feb. 4th

Assignments:

Outline:

Due : Feb 18th

Value: 2%

Review Paper:

Due : March 18th

Value: 9 %

Assignment #2 – Visualization of soil communities under selective pressure.

Students will be assigned data from previous year's classes and will assess the effects of selective pressure applied to soil communities. Data examined includes:

Microbial community functional profiles using BIOLOG plate

RFLP analysis of Soil (V3-V5) 16S rDNA

Identification of *Rhizobium sp.* by rDNA PCR

Objectives:

Learn the basic calculations, data analysis, and software (BLAST etc.) taught in the standard (non-covid) MBIO4480 lab.

Learn how to make conclusions from simple data sets.

Format: Group

Live meeting: Feb.18th

Assignments

Due : Feb 28th

Value: 4%

Assignment #3 – Investigating the effect of human interactions with soil on soil microbial communities.

In this assignment students will use assignment #1 as a jumping off point. Students will develop and propose an experiment to help further understanding in the area they reviewed. Proposals will require the use of a modern/molecular technique that normally would not be feasible to use in a teaching lab.

Objectives:

Learn to identify gaps in current knowledge

Learn basic experimental design

Become familiar with a "modern"/molecular technique and it's application to basic research

Format: Individual

Live meeting: March 18th

Assignments

Due : April 1st

Value: 5%

****The first "lab" meeting will be Feb 4th In this meeting I will give an overview of how the term will work****