

# BIOL 1625: Biology II Lab

Utah State University Eastern

Spring 2020 - 1 credit

**Lab:** R 1:30-4:20; F 7:30-10:20, Reeves 231

**Instructor:** Dr. Wayne Hatch, Reeves 251

**Office Hours:** R 10-12pm, F 1-4, and by appointment

**Contact:** [wayne.hatch@usu.edu](mailto:wayne.hatch@usu.edu), 613-5393

## **Objectives**

The objectives of the lab are to provide the student with experience designing, carrying out, and reporting results of scientific experiments.

## **Lab Manual:**

Tiny Earth – A Research Guide to Student sourcing Antibiotic Discovery; Jo Handelsman, et. al. ISBN: 978-1-59399-493-8.

## **Lab Expectations:**

Each laboratory session will begin with a short discussion and instructional period. Use the discussion periods to ask questions and clarify procedures. You are expected to arrive on time and participate in the entire lab. Expect each lab to take the entire 3 hour period to complete.

## **Course Fee:**

This course has an associated \$30 fee. This will be used to purchase supplies for lab including supplies: media for culturing and characterizing bacteria, microscope slides, conical tubes, petri dishes, and genetic sequencing supplies.

## **Assessments**

### **Assessment of participation in the Tiny Earth Initiative**

Students will attend each lab and work with one partner. A lab notebook will be kept and checked twice times during the semester. These notebook checks will be worth 20 points.

### **Assessment of using analytical skills in research**

Students will prepare a poster of their cumulative research findings. This will include a summary of their individual work including an Introduction, Methods, Results, including an analysis of findings in graphical and/or tabular form, and Conclusions sections. The completed poster will present the reasoning and analysis of the research done throughout the semester. It will be judged on clarity of information presented and quality of analytical thought put into the research. This assessment will be worth 50 points. To help in the production of this poster, 4 assignments will be given worth 10 points each. These will consist of a draft of each of the following: Introduction, Methods, Results, and Conclusions.

**Attendance:**

Attendance is **mandatory**. If you must miss a lab due to illness or other extreme circumstance (family death), notify your Dr. Hatch prior to the start of your lab.

**Cheating and plagiarism:**

Cheating of any kind will not be tolerated. Plagiarism is a form of cheating in which a student copies exactly the work of another student, passages from a textbook or other resource material. Plagiarism is unacceptable and subject to the same penalties as cheating. Lab reports/notebooks should be written in your own words and not a copy of your lab partner's work.

**Schedule** – The following schedule is a guide for the order of work that will be done. Due to the nature of research, the schedule may vary for each student as some procedures may be repeated before moving on.

<u>Date</u>	<u>Lab Activity</u>
January 9-10	Introduction to TEN; Safety in the Lab
January 16-17	Aseptic transfers; Soil selection and media choice
January 23-24	Serial dilution and plating of soil sample; Practice calculating cfu/g;
January 30-31	Screen for antibiotic producers; Calculate cfu/g; Pick and patch <b>Introduction Assignment</b>
February 6-7	Colony morphology, Discuss ESKAPE pathogens/ safe relatives and choose ESKAPE pathogens to test against <b>Introduction Assignment due</b>
February 13-14	Plate against ESKAPE relatives, <b>Notebook check</b>
February 20-21	Create pure culture isolate streaks <b>Methods Assignment</b>
February 27-28	Discuss PCR and what happens during a full run, allow time for expanded testing of isolates or repeat testing <b>Methods Assignment due;</b>
March 5-6	<i>Spring Break</i>

March 12-13	Prepare isolates for PCR; Run agarose gels from prepare samples to be sent for sequencing
March 19-20	Discuss & Analyze DNA sequencing; Spread plate <b>Results Assignment</b>
March 26-27	Chop and Freeze plates; Discuss characterizing microbes <b>Results Assignment due</b>
April 2-3	Antibiotic extraction <b>Conclusions Assignment; Notebook check</b>
April 9-10	Work on posters <b>Conclusions Assignment due</b>
April 16-17	Work on/Turn in posters
April 23-25	Poster Symposium - Tentative date