

## **Semester-long Learning Objectives For Bio113 Laboratory**

1) Cognitive: Students who successfully complete this lab course will be able to:

- Employ a scientific approach to answering biological questions and test hypotheses.
- Analyze experimental data and reach logical conclusions.
- Propose a plausible explanation of how multicellular organisms evolved.
- Describe each of the five big ideas (evolution, information, cells, emergent properties, and homeostasis) based on lab experiences.
- Organize an oral presentation for sharing scientific information with peers.
- Prepare a written summary of experiments designed, performed and analyzed personally.
- Construct a flow chart that displays the homeostatic regulation of IDH as a model enzyme.
- Explain how antibiotic resistant bacteria appear in a matter of days.
- Discuss how slime mold functions as a cell at two different levels of organization.
- Review the information contained within promoters.

2) Skills

- Use compound microscope properly.
- Assemble a slide with live cells for observation.
- Pipet correctly
- Use plate readers (absorbance and fluorescence)
- Work with cells (bacterial and eukaryotic) in pseudo sterile conditions.
- Make dilutions of stocks
- Use Excel, PPT/Keynote.
- Give oral presentation of your research
- Edit a wiki page.
- Assemble DNA oligos, ligate and transform bacteria.

3) Affective

- Appreciate the scientific process as a means to learning.
- Enjoy doing science that is novel.
- Like the connection between lab and lecture.