Unofficial BIOL108 Study Guide:

Lab 1 – Biology Tools and Techniques

- Parts of a compound and dissecting microscope.
- Using an ocular micrometer to determine the size of an object.
- Calculate the magnification of a scientific drawing.
- Sterile techniques.

Lab 2 – Mechanisms of Evolution

- Natural processes that result in speciation.
- Molecular clock hypothesis.
- Four mechanisms of evolution and how they affect change in natural populations.
    - Mutation.
    - Genetic drift.
    - Natural selection.
    - Gene flow.
- Construct phylogenetic relationships within a group of organisms using molecular traits.
    - MRCA.
    - Time-calibrated trees.
    - Speciation events.
- Interpret patterns in phylogenetic trees.

Lab 3 – Plant Adaptations and Evolution

- The effects of nutrient deprivation on root and shoot architecture.
- Highlights of plant evolution.
    - Character states of major evolutionary traits in the colonization of land among Bryophytes, Monilophytes, Gymnosperms, and Angiosperms.
- Alternation of generations.
- The life cycle of the fern*, Ceratopteris rechardii*.
- Scientific method and basic descriptive statistics.
    - Performing and interpreting the results of a two-tailed *t*-test.
    - Graphically depicting data from a basic experiment.

Lab 4 – Ecological Principles

- Ecology, habitat, habitat selection.
- Describe how inter and intra-specific competition impacts the evolution of a species.
- Identify different trophic levels.
- Interpret energy flow in a food web.
- Predict changes in populations based on trophic interactions.

Lab 5 – Kingdom Fungi

- General characteristics of kingdom Fungi.
    - Generalized life cycle of fungi (sexual and asexual stages).
- Typical life cycle of Basidiomycetes.
- Asexual reproduction in Ascomycete.
- Symbiotic relationships involving fungi.
- Biology of lichens
- Ecological roles of fungi.
- Using a dichotomous key.

Lab 6 – Experimental design

Lab 7 – Form and function in Invertebrates

- Phylogenetic relationships of the phyla in the lab.
- Body plans of the six representative invertebrate phyla.
- Advantageous and disadvantageous of different body plans and modes of symmetry.
- Characteristics of echinoderms.
- Characteristics of chordates.
- Compare the development of protostomes and deuterostomes.
- Infer lifestyle and locomotion mode based on the adaptations and body pans of an organism.

Lab 8 – Comparative Vertebrate Anatomy

- Skeletal adaptations in vertebrates during the transition to land.
- How form relates to function in skeletal structure.
- Understand the basic features of tetrapod skeletons:
    - Pelvic girdle.
    - Pectoral girdle.
    - Limbs.
    - Head.
- Differences between homology and analogy in biological traits.