**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.