Biology 172L – General Biology Lab II
Lab 00: Introduction to Biology Lab

The Nature of This Class

Since, in order to enroll in BIOL 172L, you must have been enrolled in BIOL 171L, you are already aware of the special characteristics of a freshman biology lab class for biology majors. Regardless, I believe it’s useful to remind ourselves about what a freshman biology lab is all about.

The General Biology II laboratory meets once a week for 2.75 hours. You should carefully read through each laboratory exercise BEFORE the laboratory. In addition, you should carefully review the text and lecture notes for information related to the laboratory topic. A short introduction to each laboratory exercise will be given at the beginning of the lab period. This introduction is intended to provide background information not available to you in your lab manual or text and to demonstrate techniques that may be unfamiliar to you - it cannot replace your own advance preparation. In order to complete the laboratory exercise within the scheduled three hours, it is imperative that you arrive at the lab having previously reviewed the laboratory instructions. Upon arrival at the lab, you should know what is to be accomplished that day and what is required of you as a follow-up to the in-lab work, i.e., drawings, or questions to be answered and handed in. To encourage your advanced preparation, a pre-lab quiz will be administered via Laulima before each lab activity. The quiz will test your level of preparation for that day’s lab activities.

The laboratories in BIOL 172L have been designed to complement the lecture portion of BIOL 172. Our emphasis here differs somewhat from here differs somewhat from that in lecture. While we are still concerned with "facts" in the lab, we are more concerned with (1) understanding the application of the scientific method to biology, (2) learning how to use and care for the fundamental tools of biology (e.g., microscopes, electronic balances, and spectrophotometers), (3) experiencing how the living world functions, (4) recognizing biological phenomena, and (5) demonstrating how to process and integrate observations and fundamental biological concepts.

The laboratory practical exams may test your ability to use lab instrumentation, make and interpret observations, recognize the characteristics defining major groups of living things, and identify the anatomical and functional relationships of organisms. To succeed on a lecture exam you may read and study your text and lecture notes. However, to prepare for a laboratory practical exam you will need to review procedures you used and the observations you made while conducting the lab activities. Your participation in and your documentation of the lab experiences will be essential to your success in this lab class.

Laboratory Notebook

You will be required to keep a lab notebook for BIOL 172L. The purpose of a lab notebook is to keep a complete record of your laboratory investigations. The lab notebook is your resource to assist you in preparing lab summaries and to study for the laboratory practical examinations.

The notebook should consist of bound (loose-leaf note is unacceptable) standard-sized pages (8.5" x 11"). You may want to choose a notebook whose pages display X-Y grids. This notebook should be dedicated to BIOL 172L and should not be shared among different courses. You should ALWAYS bring your lab manual and lab notebook with you to lab.

**Before the lab laboratory session** you should review the appropriate materials (lab manual, textbook, and other handouts). In your lab notebook, write a short introduction (one paragraph) that describes the goals and objectives of that day's lab activity. You should also include a detailed outline of the lab procedures described in your lab handout.

**During the laboratory session** you should record any pertinent information presented by the instructor (e.g., fundamental concepts, concerns and cautions, modifications to the procedures given in the lab handout). When you record your observations, be sure record how the observations were made and the units of measure. Data should be recorded in tables with clear titles, row headings, and column headings. Figures should be as detailed as possible with descriptive titles and significant features clearly labeled. If the lab activity asks you to answer specific questions while you are doing the lab, be sure to record the answers to
these questions in your lab manual. Finally, record any observation pertinent to evaluation of the data (e.g., problems in using instruments or collecting the data).

After the laboratory session you should record all of the data processing necessary to arrive at your conclusions. Sequential calculations should be presented in a step-wise fashion. Units of measure should accompany any numerical value written in your notebook. If graphs are required to arrive at an answer, these graphs should appear in your notebook with appropriate descriptive titles and labeled axes (with units of measure). Finally, record any interpretations and conclusions about the activity in your notebook.

The laboratory notebook is not expected to be a polished presentation. Because it is to be used during the laboratory sessions, it may receive chemical spills and get worn page edges. Your printing/handwriting may not be the neatest. Remember the primary purpose of a lab notebook is to record your activities and your observations in as much detail as possible. Getting the information in has a higher priority than producing a publishable-quality document. However, the information recorded in your lab notebook should be clear and appear in a logical sequence. Your approach to entering information in the notebook should be considering whether or not sufficient information has been recorded to permit you to pick up the notebook ten years from now and still understand what took place during the lab session. Planning ahead for the lab activity will contribute greatly to producing a clear and useful lab notebook.

Your notebook will be picked up and evaluated twice during the semester. In addition, spot checks of your notebook may also be conducted.

Laboratory Reports or Summaries

Following the lab exercise and your processing of the data, you will prepare and submit a laboratory report or summary. This typed report or summary should consist of three parts:

(1) A purpose statement, usually about 3-6 sentences long, concisely stating IN YOUR OWN WORDS the purpose or goals of the exercises, as well as any hypotheses relating to experiments.

(2) Any graphs, tables, drawings, answers to questions, etc., requested in the Procedures and Assignments or the Summary Inclusions section at the end of each laboratory description.

(3) A conclusions page, one page or less, in which you concisely discuss the major results and conclusions of the laboratory exercises, i.e., "what does it all mean?"

Note, not all laboratory activities will require a laboratory summary. However, you will still be responsible for the information covered during a lab activity. Your knowledge and understanding of all information presented during the lab may be evaluated by taking lab practical examinations.