One Semester Lab-based Survey Course Plan

Suggested Lesson Planning Guide

16 weeks, three hour lab meeting/week (either one 3-hour meeting or three 1-hour meeting) A total of 48 hours of lab time

Each lab activity should be assigned as a reading assignment prior to the class meeting. Activities may require adjustment to meet the time limitations of a particular course.

Week	Lab(s)	Lab Lesson Focus	Key Objective in Lab Lesson Students will:
1	1a 1b	Scientific Notebook Laboratory Safety	- Start and maintain a legal scientific notebook - Learn emergency procedures and the location of safety hazards and emergency equipment
2	1c	Cheese Production	- Conduct a controlled experiment and analyze data
3	2c	Microscopy	- Learn microscope use for prepared and wet mount slides
4	3a 3b 3c	Pipeting Micropipetting Mass Measurement	- Demonstrate skill using pipets and pipet pumps - Demonstrate skill using micropipets - Demonstrate skill using balances
5	3e 3f 3g	Mass/Volume Solutions Percent Mass/Volume Molarity Solutions	- Prepare mass/volume solutions - Prepare percent mass/volume solutions - Prepare molar solutions
6	3h 4e 4f	Dilutions Media Prep Sterile Technique	- Prepare dilutions of solutions - Prepare LB agar and LB broth - Pour sterile LB agar Petri plates
7	4g 4b 4h	Bacteria Cell Culture DNA Spooling Bacteria DNA Extraction	- Streak isolated colonies and start broth cultures - Perform alcohol precipitation of DNA - Isolate genomic DNA from bacteria
8	4i 4j	Agarose Gel Preparation Agarose Electrophoresis	- Prepare an agarose gel - Load, run, stain and analyze DNA on a gel
9	13f 13g	Human DNA Extraction Alu PCR Genotyping	- Isolate DNA from cheek cells for PCR - Use PCR to test DNA for a specific genotype.
10	5a 5b	Antibody Function Enzyme Function	- Simulate antibody-antigen testing - Test enzyme activity at different concentrations
11	5f	PAGE	- Prepare protein samples and load, run, stain and analyze proteins on a PAGE gel
12	6b 6c	Starch and Sugar Assays Amylase Assay	- Conduct aldose and starch indicator tests - Test saliva for alpha-amylase activity
13	14a	ELISA	- Conduct a qualitative ELISA (antibody assay)
14	7f 7g	Spectrophotometry Concentration Assay	- Determine $Lambda_{max}$ for amylase-Bradford - Use the spec to determine protein concentrations
15	8b	Restriction Mapping	- Conduct a restriction digestion of the pAmylase
16	8c	Transformation	- Transfer plasmids into *E. coli* and select transformants