

BIOL 2910 WA-Lab Biology

Instructors:

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Course Description:

This course will focus on the essential molecular biology laboratory techniques commonly used in a biology laboratory. Lectures will provide the theoretical background, and the main component of the course, labs, will provide hands-on experience.

Learning objectives:

- The scientific methodology
- Hypothesis-based research and discovery science
- Biosafety, PPE, hazard identification
- Experiment design
- Scientific writing and reporting (i.e., maintenance of a lab book and lab report)
- Following protocols and laboratory methodology
- Preparation of solution and reagents (i.e., lysis buffer, gel casting)
- Use of essential lab equipment (i.e., centrifuge, thermocycler, electrophoresis)
- Data/results analysis and critical thinking
- Working with labmate
- Basic math

Time and place:

Lecture - Monday 11:30 AM – 12:30 PM

Labs - Monday 12:30 PM – 2:30 PM and Friday 11:30 AM – 2:30 PM

Textbook/manual: *To be announced*

Course evaluation:

GRADING

Ethics (see lab manual)	5%
Lab Book (group)	10%
Mini-assignments (7)	15%

Pre-lab schematics (8)	10%
Bell-ringer exam (1)	10%
Group lab report (1)	10%
Other Lab reports (top 3 of 4)	30%
Poster (1)	10%

Week-by-week schedule:

Week	Lab ID	Date	Topics
1	Intro and Lab 1	Mon Jan 8	Overview of Labs and Science!
	Lab 2	Fri Jan 12	Lab Safety and Equipment
2	Lab 3	Mon Jan 15	Pipette types and skills
	Lab 4	Fri Jan 19	Solutions preparation
3	Lab 5	Mon Jan 22	Titration of buffers
	Lab 6	Fri Jan 26	Excel tutorial and lab reports
4	Lab 7: Day 1	Mon Jan 29	Tissue culturing; prep
	Lab 7: Day 2	Fri Feb 2	Tissue culturing; experiments
5	Lab 8	Mon Feb 5	Plant pigment extracts
	Lab 8	Fri Feb 9	Plant pigment spectra and chlorophyll
6	Lab 9: Day 1	Mon Feb 12	Protein extraction from seeds
	Lab 10	Fri Feb 16	Applied research lab tours
READING WEEK! No classes Feb 19–23.			
7	Lab 9: Day 2	Mon Feb 26	Protein quantification
	Lab 11: Day 1	Fri March 1	Protein SDS-PAGE gel preparation
8	Lab 11: Day 2	Mon March 4	SDS-PAGE run seed protein extracts
8	Lab 12: Day 1	Friday March 8	pDNA
9	Lab 12: Day 2	Mon March 11	Horizontal electrophoresis
	Lab 13:	Fri March 15	Thin layer chromatography
10	Lab 14	Mon March 18	Bell Ringer Lab Exam
	Lab 7	Mon March 18	Tissue culture; take-down
	Lab 15: Day 1	Fri March 22	Size exclusion chromatography; prep
11	Lab 15: Day 2	Mon March 25	Size exclusion chromatography; run
EASTER HOLIDAYS: No classes Friday March 29 and Monday April 1.			
12	No Lab!	Fri April 5	Get help; contingency day
	Lab 16: Day 1	Mon April 8	Immunoassay - Dot blots
	Lab 16: Day 2	Tues April 9	Immunoassay - Dot blots
COME AND WATCH SOME HONOURS THESIS PRESENTATIONS TUESDAY APRIL 9th in CB3013			

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