

## **BIOL 2910 WA-Lab Biology**

### **Instructors:**

Course instructor: Dr. Guillem Dayer	Email: gdayer@lakeheadu.ca
Lab technician: Dr. Susanne Walford	Email: swalford@lakeheadu.ca

### **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 2:30 PM – 3:30 PM

Labs - Monday 3:30 PM – 5:30 PM and Friday 2:30 PM – 5:30 PM

**Textbook/manual:** *To be announced*

### **Course evaluation:**

Ethics (see lab manual)	10%
Lab Book (group)	10%
Mini-assignments (7)	30%
Pre-lab schematics (8)	10%
Lab report (1)	40%

## Week-by-week schedule:

**Table 1.:** Proposed schedule of lab activities for BIOL2910WA

Week	Lab ID	Date	Topics
1	Intro and Lab 1	Mon Jan 6	Overview of labs; Science!
	Lab 2	Fri Jan 10	Lab safety and equipment
2	Lab 3	Mon Jan 13	Pipette types and skills
	Lab 4	Fri Jan 17	Excel tutorial and presenting results
3	Lab 5	Mon Jan 20	Solutions preparation
	Lab 6	Fri Jan 24	Titration of buffers
4	Lab 7: Day 1	Mon Jan 27	Plant pigment extracts
	Lab 7: Day 2	Fri Jan 31	Plant pigment spectra and chlorophyll
5	Lab 8	Fri Feb 3	Formal lab reports and posters
	Lab 9: Day 1	Fri Feb 7	Tissue culturing; prep
6	Lab 9: Day 2	Mon Feb 10	Tissue culturing; experiments
	Lab 10	Fri Feb 14	Thin layer chromatography
READING WEEK! No classes Feb 19–23.			
7	Lab 11: Day 1	Mon Feb 24	Size exclusion chromatography; prep
	Lab 11: Day 2	Fri Feb 28	Size exclusion chromatography; run
8	Lab 12: Day 1	Mon Mar 3	Plasmid DNA extraction
	Lab 12: Day 2	Fri Mar 7	Horizontal electrophoresis
9	Lab 9: Take down	Mon Mar 10	Tissue culture; take-down
	Lab 13: Day 1	Fri Mar 14	Protein extraction from seeds
10	Lab 13: Day 2	Mon Mar 17	Protein quantification in extract
	Lab 14: Day 1	Fri March 21	Protein SDS-PAGE gel preparation
11	Lab 14: Day 2	Mon March 24	SDS-PAGE seed proteins
	Lab 15: Day 1	Mon March 28	Immunoassay - Dot blots
12	Lab 15: Day 2	Fri March 31	Immunoassay - Dot blots
	Lab 15: Work slot	Fri April 4	Assignment work slot
COME WATCH SOME HONOURS THESIS PRESENTATIONS FRIDAY APRIL 4th in CB3013			

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