

BIOLOGY 2910 Laboratory Biology

LECTURE MANUAL 2015

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Professor and Laboratory Technician: **Susanne Walford**, CB3014A,
swalford@lakeheadu.ca

Teaching Assistants (TAs): Ashley Nemec Bakk (asnemec@lakeheadu.ca) and
Greg Mulzer (gpmulzer@lakeheadu.ca)

There are NO required textbooks. Resources are available during lab times for your use.
THESE MAY NOT BE TAKEN OUT OF THE LAB

There is an extensive course and laboratory manual. Every attempt will be made to cover relevant materials PRIOR to each lab, but this is not always possible. **Help each other**, particularly with the computer tasks! The university has over 100 computers for your use if you don't own one (all IBM/Microsoft). Before each lab, there will be a quiz based on ONE of the pre-lab questions, testing your preparation for the lab.

There are lectures in the first week of the course and in the one hour slot Mondays. The remaining five hours per week are to complete labs activities. Major emphasis in the course is on lab skills which is subsequently reflected in the course marking scheme.

**LATE ASSIGNMENTS WILL HAVE 10% OF THE
GRADE DEDUCTED PER DAY.**

Mark Breakdown

45% Formal experiment reports. Format and expectations in lab manual.

15% for 1st

30% for 2nd

25% Techniques reports. Format and expectations details in lab manual.

15% Pre-lab questions

15% Term exam on theoretical content (there is NO formal final exam!)

100% TOTAL

THE LECTURE MIDTERM WILL BE HELD MONDAY MARCH 2, 2014 and may include material from both labs and lectures.

The lecture component of the course covers:

- Laboratory note-taking and notebooks
- The study of science
- Study skill development
- Scientific writing
- Graphing, Basic statistics
- Tissue homogenization and buffers
- Centrifugation and chromatography
- Spectrophotometry
- Electrophoresis
- Antibodies as detection tools

Information given to you during lectures and included as introductory material in your lab manual should be used in the preparation of BOTH techniques and experiment lab reports. Full details are found in the lab manual.

Computer applications (graphing, basic statistics, literature searching) will be introduced. If you find an easier way to do something, please share with the entire class!

LAKEHEAD UNIVERSITY
LABORATORY BIOLOGY
BIOL 2910WA
Winter 2015

Professor and Technician: Dr. Susanne Walford
Teaching Assistants: Ashley Nemec Bakk and Greg Mulzer



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A. Introduction

The goal of this course is to create a meaningful and creative laboratory experience for students who are first opening their eyes to the exciting world of experimental biology. We hope to prepare you for performing experiments and writing lab reports in upper level courses in Microbiology, Biochemistry, Molecular Biology, etc. Perhaps you will be inspired to continue in these fields after you graduate. Even if you do not continue, this course will provide you with skills required to work or study in other related areas, including medicine, environmental studies, forensics or biotechnology.

B. Lab Due Dates

Unless otherwise discussed AND announced, **technique reports** are due **1 week** after the lab, being at the **start** of the lab period (i.e. Tuesday 2:30 pm). If you arrive late to lab, your report is late and subject to the late penalty!

The first experiment report is due **THURSDAY FEBRUARY 12, 2015** via the DropBox under MyCourseLink (Desire to Learn (D2L)). The second experiment report is due **THURSDAY MARCH 26, 2015** and MUST include results and discussion from the electrophoresis lab (Lab 7) which utilizes your original protein extract(s). An electronic DropBox has been established. Please submit reports to the DropBox AS A PDF! Several methods on how to do this will be demonstrated during the course.

Add these due dates to your lab manual and personal calendars NOW!

C. Lab Schedule

Course and lab materials will closely follow the schedule outlined in Table 0.1. Some modifications may be required. This is a “hands-on” course! Students are expected to attend all lab sessions. Typically, lectures are Mondays from 2:30 to 3:30 pm and labs Mondays 3:30 to 5:30 pm and Tuesdays 2:30 to 5:30 pm. However, there are some weeks where there are only lectures, and some weeks where there is no lecture. Pay close attention to schedule changes mentioned during lectures!

Table 0.1. Proposed schedule for Laboratory Biology 2910-WA, 2015. First day of classes is January 5, 2015.

Dates	Lab Type	Lab	Lab Skills
Jan 5	Review	Online videos	Excel, PDF's;
Jan 6	Planting	Prep for Lab 6	Experimental design
Jan 12	Orientation	Lab 1	Safety and Equipment
Jan 13	Technique	Lab 2	Pipettes, pH, and Buffers
Jan 19–20	EXPERIMENT	Lab 3	Specs and TLC; Coleus
Jan 26–27	Technique	Lab 4	Gel Permeation Chromatography
Feb 2–3	EXPERIMENT	Lab 6	Protein analysis (Bradford); germinating seeds
Feb 9–10	Hospital Tours	Lab 5	Employment and research options
Feb 12			EXPERIMENT 1 REPORT DUE!
Feb 16–20			READING WEEK! No classes.
Feb 23–24	Technique	Lab 7	SDS-PAGE
March 2	THEORY EXAM	—	—
March 3	Writing help	—	Science writing
March 9–10	Technique	Lab 8	Western (Dot) Blotting
March 16–17	Contingency week	—	—
March 23–24	Final report draft	—	Science writing
March 26			EXPERIMENT 2 REPORT DUE!