BIOL368 Genetics and Cell Biology Laboratory
Winter 16

Lecture location:	CC-115 Loyola
Lecture time:	Fri 2:30-4:00 p.m (14:30-16:00)
Lab location:	SP-385.09 (The southern end of SP building.)
Lab times:	Sections 01 (Tue), 02 (Wed) and 03 (Thu): 13:30 – 17:30

Instructor: Dr. Amandeep Glory
Office Room Number: to be announced
Email: amandeep.glory@concordia.ca **Please put BIOL368 in the subject line!**

If you have questions, you can ask questions after biol368 lecture on Friday or after finishing your lab work. Otherwise, please e-mail me for an appointment. I will not answer your questions over e-mail.

Technician: Robert Carson
Room: SP-375.29, Tel. 848-2424 ext. 3418, E-mail: Robert.Carson@concordia.ca

Teaching Assistants: Please obtain TA information from Moodle.

Course Description

This course introduces students to the basic laboratory techniques of cell biology, microbiology, bacterial genetics, and molecular biology. Experiments include: cell membrane functions in red blood cells, bacterial identification, mutagenesis, genetic transformation, gene mapping, DNA isolation and recombinant DNA techniques. Through tutorials, students learn the theory behind techniques and their use in research. Special focus is placed on lab manipulation skill, data organization, and data interpretation.

Lab manual

Please download the lab manual from the Moodle BIOL368 course portal.

i>Clicker

The i>Clicker system will be used during lectures. If you don't have one, please purchase or rent at the book store. Also, you need to register your i>Clicker at My Concordia Portal. Please follow the direction posted on Moodle.

Other course materials

Lab book (bound hard cover, not spiral bound), calculator, lab coat, and safety glasses.

Computer skills

You should be able to use MS Word and Excel (or equivalent software). If you are not familiar with spreadsheet calculations, graph creations, etc., self-tutorials are found here: http://www.baycongroup.com/el0.htm https://support.office.com/en-us/article/Office-training-and-tutorials-b8f02f81-ec85-4493-a39b-4c48e6bc4bfb?legRedir=true&CorrelationId=96033e7d-f0f5-4004-8c24-0a74831b2725&ui=en-US&rs=en-US&ad=US .

Additional resources

No textbooks are assigned. Suggested readings for general information are:

- "At the bench: a laboratory navigator" Kathy Barker. Cold Spring Harbor. Course reserve at Vanier Library. One copy is kept in the BIOL368 lab. Please do not take it without asking.
- "Introduction to Genetic Analysis" Griffiths et al. WH Freeman & Co. Online version also available at NCBI Bookshelf http://www.ncbi.nlm.nih.gov/books
- Todar's Online Textbook of Bacteriology: http://www.textbookofbacteriology.net
- JoVE Science Education Database http://0-www.jove.com.mercury.concordia.ca/science-education-database

Other relevant reading materials will be posted on Moodle.

Marking Scheme

Item	% of final grade
Lab reports	34 %
Lab skill test (Oct 18-20)	7 %
Online Quizzes (Sept 19, 26)	1 %
Clicker Quizzes	7 %
Midterm (Oct 14)	7 %
Final exam	42 %
Prelab assignment	2 %
Performance penalty	- 1 % per incident
Performance bonus	Up to 2 % per term

Grading scheme

A^+ = ≥90, A = 85-89, A^- = 80-84
B^+ = 77-79, B = 74-76, B^- = 70-73
C^+ = 67-69, C = 64-66, C^- = 60-63
D^+ = 57-59, D = 54-56, D^- = 50-53
F = <50

Clicker quizzes

Quizzes are administered during the lecture. You need an i>Clicker in order to answer clicker quizzes. Please read the section on i>Clicker above.

Lab projects

Project	Report due	% of final grade
1. Spectrophotometer*	Sept 20, 21 or 22 (Optional resubmission: On Sept 30th 4 pm)	2 %
2. Aseptic techniques	Oct 4, 5 or 6	3 %
3. *E. coli* genetics	Oct 11, 12 or 13	4 %
4. Mutagenesis	First half: Oct 18, 19 or 20 Second half: Oct 28 at 4 pm	6 %
6. Visualizing microbial cells	Submit Prelab before lab; other lab work submitted at the end of lab (Oct 25, 26 or 27)	3 %
7. Genomic DNA isolation	First half: Nov 8, 9 or 10 Second half: Nov 15, 16 or 17	6 %
8. Cloning	On Nov 18th 4 pm	6 %
9. Cell physiology	On Dec 1st 4 pm	4 %

* For this report only, students are allowed to re-submit the report. The higher grade will be kept in the grade book.

Lab Report submission

A large part of your mark comes from your lab reports. Make sure to follow specifications. You must submit your report in two ways: via Moodle, and bring in a hard copy to the lab. **A late penalty will be applied if you fail to upload the file or bring in the hard copy on time.** Moodle submission is for keeping track of late penalties and scan for possible plagiarism. Evaluation is based on the hard copy.

1. Hard copy must be submitted **at the beginning of the lab.**
2. Electronic submission: **The report file must be uploaded to Moodle by 6 pm** on the report due date. Use the designated area for each report. The soft copy should include all texts and tables. However, it is not necessary to include pre-labs, drawings or any other materials needs to be hand drawn.

Late submission: Late penalty (5 % per day) will be calculated based on the date of uploading, including weekends. If you submit late on the due date, the late penalty will be 5 % until midnight of that day. If you submit the next day, the penalty will be 10 %. **A late penalty will be handled by the instructor not by TA**.

Do not ask me for extensions just because you have other midterms. My suggestion is to submit your reports early. This applies to any other commitments such as religious holidays, job interviews, wedding, etc. Please plan ahead.

Lab skill test

Each of you will be given a 20 min time slot and the TA will evaluate your manipulation skills such as aseptic techniques, pipetting, use of spectrophotometer or other relevant equipment. A passing grade is 60 %.

Performance penalties

Your TA will monitor your lab performance and report any improper behavior in the lab. This will count as a penalty and 1 point per incident will be subtracted from your final grade. Penalty points may be taken for:

- Pre-lab not done before coming to the class
- Late for the lab
- Violation of safety protocols
- Improper usage of equipment
- Mistakes in lab procedures due to carelessness
- Not completing lab procedures before leaving
- Not cleaning up after the lab
- Not submitting data for class data collection
- Any other improper behaviors

Performance bonus

Students who showed exceptional lab performances throughout the term will be awarded up to two bonus points per term.

Lab Attendance

Lab attendance is mandatory. If you miss the lab, you will lose 5 % from your final grade unless an alternative arrangement is made. Alternative arrangements are made only for exceptional circumstances. **If you miss more than two labs for any reasons, you will fail the course automatically.** If you cannot come to the lab due to illness or any other serious reasons, contact me and the technician before the lab so that we can make an alternative arrangement. Your situation will be assessed on case-by-case bases.

Lab book

A bound laboratory notebook must be used to record pre-lab activities (see below), any changes made to the procedures, results and analyses of the results. The date and project number should be clearly written when you make entries to your lab book. Tape any loose papers (class results, charts and graphs, etc.) into your lab book. Guard your lab book. Your lab book needn't be beautiful but should be legible to you and anybody else. Good lab book keeping is the key to successful research activities.

Before the lab

Reading:

Read the lab manual on your own time before the allocated lab period. Read it at least twice. First to get the overview of what you'll be doing for the particular project. The lab manual is organized by that week's work but not by the project. Many projects are spread over two or three weeks. You will not understand the project until you read through the all the experiments needed to be done. Review background materials as needed.

Once you understand the project, then read through again step-by-step what you will be doing during the particular week and plan how to carry out the work by drawing flow charts, diagram or scheme. Standard calculations must be done beforehand. You'll enter these works as pre-lab in your lab book (see below).

Pre-lab:

You must prepare a pre-lab in your lab book before coming to the lab. **Pre-labs must be signed by your TA** before you enter into the lab. The pre-lab should include a flow chart, diagram or scheme of what you will be doing in that day's lab as well as any tables, calculations and other information needed (plasmid maps, strain descriptions, etc.). Complete the pre-lab assignments designated by the lab manual. **Prelab will be graded during lab period by section TAs.**

During the lab

- Wear a lab coat. Wear safety glasses if needed. Long hair must be tied up.
- No food/drink. No bags. No cell phones. No open toe sandals. No baseball hat.
- Wash hands before and after the lab. Wear gloves if needed.
- Wipe the bench top before and after the lab.
- You will work in pairs. Make sure that both of you learn your lab manipulation skill during the lab period. There will be a lab skill test at the end of term.
- Ask for assistance if you make a mistake during your experiment. Within limits, we can supply fresh materials to repeat the experiment. Alternatively, we can suggest ways to correct your mistake.
- If lab activities involve calculations, check for the accuracies by consulting TAs or other students.
- The lab manual lists a number of questions you need to answer when you analyze your results. Deal with the questions during the lab period. Discuss with your partner and fellow students. Ask TAs for help. Answers to these questions should be included in the lab reports.
- CLEAN UP before you leaving.

Data management

Group data: Enter all your data into your lab book. Then fill out the Student Data Entry form for the day. Submit the form to your TA.

Section data: When section data are required, your group data will be entered into an Excel spread sheet by your TA. The file will be uploaded to Moodle. You need to download the file from Moodle.

Important notes on academic misconduct

Plagiarism is the most common act of academic misconduct. Plagiarism can be defined as handing in a work that is not your own. This includes copying materials from published or unpublished sources without citing the source, or copying from another student's work.

All lab reports will be scanned by plagiarism software at the end of the term. If suspicious activities are detected, the instructor must a file incident report to the Code Administrator and the sanction will be determined by the Code Administrator. The procedure is in place to identify students who repeat misconducts. Students may not be notified individually by the instructor or TA until the incident report is submitted. Since scanning is done at the end of the term, you may receive notification only at the end of the term. In that case, you will temporally receive grade of NR. NR grade will be changed to appropriate grade later on.

If Student A provides her/his assignment to Student B and Student B ends up copying the assignment, both Student A and B are guilty of misconduct. Please safe guard your assignments and assignment files. It is for your best interest. Lab partners may have the same results to work with. However, each report must be written in the individual's own words.

The following statements are taken from The Academic Integrity Website (http://www.concordia.ca/students/academic-integrity/plagiarism.html).

*"**Plagiarism**:*

*The most common offense under the Academic Code of Conduct is plagiarism which the Code defines as **"the presentation of the work of another person as one's own or without proper acknowledgement."***

This could be material copied word for word from books, journals, internet sites, professor's course notes, etc. It could be material that is paraphrased but closely resembles the original source. It could be the work of a fellow student, for example, an answer on a quiz, data for a lab report, a paper or assignment completed by another student. It might be a paper purchased through one of the many available sources. Plagiarism does not refer to words alone - it can also refer to copying images, graphs, tables, and ideas. "Presentation" is not limited to written work. It also includes oral presentations, computer assignments and artistic works. Finally, if you translate the work of another person into French or English and do not cite the source, this is also plagiarism.

In Simple Words:
DO NOT COPY, PARAPHRASE OR TRANSLATE ANYTHING FROM ANYWHERE WITHOUT SAYING FROM WHERE YOU OBTAINED IT!"

If you are not sure how to paraphrase without plagiarizing, please refer to this example given by the Academic Integrity information: http://www.concordia.ca/students/academic-integrity/plagiarism.html . Examples are shown near the end of the web page.