This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 337 – Introductory Genetics Laboratory

General Course Syllabus (as of January 2020)

About the Course:

Course Description: A laboratory course demonstrating the fundamental principles of inheritance: Mendel's Laws, sex-linkage, mapping, mutagenesis, chromosome structure, developmental biology, biochemical and population genetics.

Course Format: Laboratory
Credits: 3
Pre-requisite: BIOL 200
Co-requisites: One of BIOL 233, BIOL 234

Course Learning Objectives:

The purpose of this lab is to put into practice fundamental genetic principles students have already learned such as linkage, mutation analysis, and mapping.

By the end of this course, students will be able to:

- Use critical thinking to: analyze the results of an experiment, trouble-shoot difficulties and plan experimental procedures.
- Apply the scientific method to a series of genetic experiments.
- Make accurate observations of organisms to be able to detect different phenotypes and different life stages of an organism.
- Based on prior knowledge and experience make independent decisions about experimental procedures i.e. trust one’s own judgment.
- Develop technical proficiency with different basic lab procedures.
- Use bioinformatics databases to analyze and apply molecular information about genes and proteins.

Textbooks and Additional Resources:

- **Course Website:** course materials, including the lab manual, will be posted on Canvas (canvas.ubc.ca)

Evaluation:

Sample grading scheme for 2018W2 (subject to change):

Assessment	Weight
Quizzes (20 x 1% each)	20%
Lab Reports - #1 Introduction (5%) - #2 Mapping unknowns (13%) - #3 3-factor mapping (9%) - #4 mutation structure (9%) - #5 SSLP mapping (15%)	51%
Assignments - Bioinformatics #1 (10%) - C. elegans gene structure (6%) - Primer design (3%)	19%
Participation	10%

DETAILS ON ASSESSMENTS:

Quizzes: The purpose of the quizzes is to prepare students for the material to cover in that day's lab. Possible quiz questions are given to students in advance of each day's class, and students are randomly asked some of these questions at the start of class or online before the lab. Every fourth class there will be a review quiz on questions from the previous weeks. The quizzes are an opportunity to obtain a significant portion of the grade individually rather than based on the work of their whole group.

Lab Reports and Assignments: Lab write-ups and bioinformatics assignments (answering questions related to a bioinformatics activity) make up 70% of the total course grade. As a lab course, the largest component of the course grade will come from the lab reports written up for the five different major labs (51%). More tips on writing a formal lab report and instructions for each individual lab report will be provided in the course. 10% is deducted for each day a lab report is late.

Participation: This is a lab course where students are doing things rather than simply listening to lectures, and the amount of work put into the lab is of value. Although students gather data as a group, individual contributions from time spent in the lab and questions asked will be reflected in the participation mark, and students will have input as to their group members' participation over the term.

Schedule of Topics:

Each lab or assignment involves setting up crosses (plating and scoring) over multiple weeks/class periods. Below is a sample list of topics and schedule from 2018W2 (**subject to change depending on the UBC calendar**):

Activity	**Week assigned**	**Week due**
Lab 1: Observation of Wild type and Mutant C. elegans and A. thaliana	1	3
Lab 2: Determining Linkage between unknown strains and a marker in C. elegans via genetic crosses	1	8
Bioinformatics Assignment #1: Investigation of mystery DNA sequence	2	5
Bioinformatics Assignment #2: An analysis of gene *unc-54*	2	9
Bioinformatics Assignment #3: Primer Design	2	11
Lab 3: 3-factor mapping with a GFP insertion	7	12
Lab 4: Complementation testing and PCR analysis for 3 similar alleles in C elegans	8	13
Lab 5: Short Sequence Length Polymorphism (SSLP) mapping in Arabidopsis	9	14

(Note: no labs during Week 7 for Reading Break but 1 member of each group comes in briefly to tend to a genetic cross)

University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

> *UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.*
>
> *UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.*
>
> *UBC values academic honesty and students ae expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.*

Details of the policies and how to access support are available on the UBC Senate website.