



LAND ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
Advanced Biochemical Techniques	BIOC 420	3

PREREQUISITES

BIOC 301

COREQUISITES

None

COURSE LOCATION AND TIME

Time (Day(s), Hour)	Room
Section 101 – Tuesday 8:30am - 5:30pm	Seminar room: 3026
Section 102 – Thursday 8:30am – 5:30pm	Laboratory: 3018

Labs start at 8:30 am each day and continue until the experimental work for the day is completed or 5:30 pm. Also, on certain occasions you may need to come into the lab briefly outside of your scheduled lab time to facilitate experimental progress.

COURSE CHAIR AND INSTRUCTOR

Course Chair	Contact Details
Dr Scott Covey (he/him/his)	scott.covey@ubc.ca Office: Biological Sciences 3049

LEARNING OUTCOMES

While this is a lab course, the objectives of the course go beyond learning the technical details of the experiments performed. The course will also focus on experimental design, data analysis, project planning and communication science.



This course aims to:

- Provide students with a realistic research experience
- Improve problem solving and deductive reasoning skills
- Provide experience designing and troubleshooting experiments
- Improve written scientific communication skills
- Transition your knowledge of theory into practical application

You will obtain direct experience with:

- Designing a sgRNA and homology cassette for a CRISPR mediated gene edit
- Building CRISPR delivery systems and homology cassettes
- Golden gate (type IIs) cloning
- High specificity PCR of gDNA
- Transfection of cultured cells
- Fluorescence microscopy
- gDNA preparation and assessing indels

COURSE OUTLINE

This laboratory course will take students through a set of connected lab experiments. Students will be presented with very general research aims and notes for each day's lab work. Note that student will be required to develop their own protocols, workflows, and controls prior to the experiments. Each day class will begin with a group meeting to discuss prior data, details for the day's lab work and instructions on scientific communication and preparation of the progress reports. Students are expected to contribute to the discussion during group meetings and come prepared. This does not mean you have to understand every aspect, but rather be aware of what aspects you do not understand and be ready to ask questions to gain an understanding. Students will work in teams of 2, however it is expected that all groups will work together and support each other in learning and progressing through the course.

In the laboratory students are expected to:

- Operate in a safe and efficient manner
- Wear lab coats when performing experiments or handling equipment or reagents
- Not to wear shorts or sandals when performing experiments or handling equipment or reagents
- Wear appropriate personal protective equipment (PPE) as required for the procedure
- Dispose of material in appropriate manner (see document on the course website regarding lab safety and waste disposal)

COURSE SCHEDULE

A detailed schedule of the weekly activities can be found in a separate document on the course website.

COURSE MATERIALS

All course related material, such as lab manuals, protocol documents, manufacturer instructions, material safety data, instructions for progress reports, and DNA files can all be found on the course website (Canvas).



GRADING SCHEME

Assignment	Grade Weight
Progress report #1	30 %
Progress report #2	65 %
Lab performance (pre-lab preparation, lab citizenship, interaction with peers and TAs)	5%

GRADING AND COURSE POLICY

Whenever feasible provide 24hrs notice (to the course Instructor, TA, and your lab partner) of an absence. If a student misses the equivalent of 2 lab days, there will be a meeting with the course Instructor to discuss if completion of the course is feasible. In some cases, the student will be requested to withdraw from the course. Note that absences for medical reasons may be handled differently and the policy altered to accommodate certain situations. If the policy creates an issue for your particular case, speak to the course chair. Students with disabilities and ongoing medical conditions have the option to request an accommodation for the course assessments after registering with the Centre for Accessibility.

If progress reports are not submitted on time, there will be a 10% per day penalty. If you need to request an extension, please contact the course chair.

USE OF ARTIFICIAL INTELLIGENCE IN COURSE WORK

For this course students can use artificial intelligence (AI) in their work. The use of AI to understand concepts, improve writing and other such functions can be utilized without it being considered academic misconduct. However, students are fully accountable for the content in their work. Inaccuracies, incorrect, and off topic content will be critiqued as such. Moreover, proper English and scientific writing standards are expected, as is proper referencing in all submitted documents. Thus, collectively students are free to use AI as a tool, but they should do so cautiously with critical analysis of the content.

ACADEMIC MISCONDUCT

UBC and the Department of Biochemistry and Molecular Biology take the issue of academic misconduct very seriously; the honest assessment of student learning is key to both the success of the university and success for individual students. Cheating, in any form, undermines the value of a degree and can have serious consequences for your continued academic success. As such it is important to know what your responsibilities are, what constitutes misconduct and how you can avoid it. With some effort and forethought no student should ever have to find themselves facing discipline for academic misconduct; inform yourself as to the expectations placed on you and what your responsibilities are. UBC definition of academic misconduct can be found in the [UBC Calendar](#) and additional information is available in this [UBC resource link](#).



What consequences can arise from academic misconduct?

The severity of the discipline can range from a letter of reprimand or a zero on the assignment in question all the way to expulsion from the University. Perhaps the most common outcome in these cases are grades of zero in the course in which the misconduct occurred.

EQUITY DIVERSITY AND INCLUSION (EDI) POLICIES

It is our goal that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and diversity that the students bring to this class be viewed as a resource, strength and benefit. We make a commitment to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. We will foster a climate within the classroom where students of diverse backgrounds and identities feel comfortable sharing their opinions and experience with varied topics throughout the class. We (like many people) are learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable or if you observe a situation where someone else is made to feel uncomfortable, please talk to us about it. This includes concerns about any class-related interactions that lead to feelings of exclusion or marginalization. We welcome and encourage your feedback on how we can better cultivate a sense of inclusion in our course. This can be done through meetings, email or anonymous feedback through canvas. We aim to do our best to address each situation as it arises and effect meaningful changes moving forward. For more information visit our [departmental EDI webpage](#).

STUDENT RESOURCES

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 observances. UBC values academic honesty and students are 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](#).

Mental Health Resources

In case you are struggling with mental health, or are feeling stressed or anxious, [UBC Counselling services](#) provides information about a number of resources for students to use. Additionally, UBC students receive [mental health coverage of up to \\$1500](#) under the AMS Health & Dental Plan (more information about coverage [here](#)).

[Here2Talk](#) is available for BC post-secondary students to talk with trained counsellors 24/7 (via voice call or text messages). If you are a student living in UBC residence, [Counsellors in Residence](#) can also be a valuable resource to provide mental health support. If you have a UBC email address, [Therapy Assistance Online \(TAO\)](#) is a free online resource that provides tools to manage stress, relationship problems, substance use, etc.



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