Applied Molecular Biology, Biol470, University of Victoria

Welcome!

We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the University of Victoria stands, and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day. We are thankful to be able to learn together on this land, and strive to make the world a better place.

We welcome everyone to learn in this course and we respect every human being, including all people from all ethnic backgrounds, religious beliefs, sexual orientations, genders, socioeconomic backgrounds and abilities.

We want to welcome parents, and we invite their children to lectures if missing lecture would be the alternative.

Your instructor

Instructor: **Dr. Barbara Ehlting** (Course coordinator, lecturer)

email: behlting@uvic.ca

How to connect with me?

- You can always connect with me via email. My goal is to respond no later than within 24 h on business days.

- Want to meet in person? Just send me an email and we arrange a meeting time (preferred times: Tuesdays/Wednesdays/Fridays). Office hours are for you to connect with me, discuss lecture material, and for us to get to know each other.

- Want to know about my background? You can find out more on the Brightspace 'Meet your instructor' site!

Goals for this course:

I want you to engage in the transfer from basics to applications of molecular biology found in many areas of daily life. I will introduce you to the power of eDNA relevant in ecology, DNA analyses relevant for forensic investigations as well as paternity tests, genetic counselling and personalized ancestry, the importance of modern drug production. You will meet professionals from local companies, police officer working for the Coroners Service of BC and genetic counsellors working at Victoria General hospital (VGH) as well as scientists working for local companies. For major topics you will be engaged in case studies where you can apply your knowledge and solve queries.

My main goal is to excite you about the many applications in very (!) diverse disciplines and potentially develop your own ideas about future applications.

Intended Learning Outcomes for 'Applied Molecular Biology':

At the end of this course, you will…

- have an understanding how **molecular biology is applied** in four non-academic/applied areas: forensic Biology, genetic counselling, the power of eDNA used in ecology and biotechnology.

→ you will learn about **potential work places** and **applications** of molecular tools outside research, which hopefully opens doors for your future (directly and indirectly by considering the discussed topics but also thinking outside the box)

- engage with the lecture material by answering and submitting answers to **discussion questions** during class time (formative assessments, low stakes participation case studies)

→ You will draw conclusions from graphs/figures by applying learned material and finding solutions by discussing with peers.

- collaborate with peers working on large **case studies** during class time (summative assessment, marked grades)

→ you will apply what you have learned, search for new information independently and solve cases collaboratively within your working group

- you will be able to **peer evaluate** your colleagues work by using a grading rubric

→ you will learn from your colleagues by critically evaluating their work (pick up what you might have missed)

→ you will learn by providing constructive feedback (think about how your colleagues can improve and consider that advice for yourself; participation grade)

- explore the field of applied molecular biology by **presenting one topic of your choice** to the class (presentation grade)

→ you will open the door to more topics of applied molecular biology and be comfortable to share your information with your peers

- **engage with** at least four **professionals** (one police officer, genetic counsellor(s), one post-doc working with eDNA, scientist(s) working at local biotechnology companies, …). Listen to their presentations and ask questions!

- perform to perfection **major live skills** such as *meeting deadlines*, *punctuality*, *time management, collegiality, open discussion* with peers and instructor, being *proactive* aiming for problem solving rather than complaining.

Designated Class time and location:

Mondays & Thursdays at 10 am – 11.20 am in HSD A270

Class time is our time together and critical for your active learning journey. I designed this course as an active learning experience with student engagement in form of discussion questions (participation grades), group work to work on case

studies (graded work), peer marking and student presentations, and open discussion. It is important that each one of us takes an active part in this class by active listening and asking questions.

Prerequisites:

Biol230

Tentative Class Schedule

- Welcoming, rules and regulations,
- Introduction to Applied molecular biology
- Topic 1: Forensic investigations: genetic fingerprint
- Topic 2: Genetic counselling, Personalized genomes and anchestry
- Topic 3: Application in ecology: environmental DNA (eDNA)
- Topic 4: Biotechnology, Production of hormones, amino acids in large scale
- Student presentations
- Wrap up and catch up, Review, evaluation…

Textbook:

Different textbooks are used for different topics, but those are optional. All important information will be given on lecture notes.

Lecture notes will be posted on Brightspace. I recommend that you bring the lecture notes to classes to add comments on slides and answer questions.

Provided lecture slides are for personal use ONLY and are not allowed to be distributed without permission from the publisher. The material is protected under copyright law, even if not marked with a ©. Any further use or distribution of materials to others requires the written permission of the instructor.

Lectures (and student presentations) will be recorded with Echo360 (video files) and/or voice (audio files).

Evaluation:

- **Participation case studies** (Participation grades): 1-2% each for answering and submitting discussion topics during class (5% for topic 1, 13% for topic 2, 8% for topic 3, 5% for topic 4, **31% total**,). You can discuss with your peers, but every student submits their own work for participation grades.

If you miss class, you can submit participation case studies within 24 h of class time.

- large **case studies**: **8%** each (8% for topic 1 topic 2, and topic 4) completed in groups during class time), **24 % total**. Select new groups for each case study.

If you miss class, you can submit large case studies within 48 h of class time by working on those case studies individually.

Working on cases studies (participation and large) during class time are considered essential core components of the class. Submission of your work is done electronically on Brightspace. Missing too many case studies will result in an N. Alternative forms of assessment might be necessary and would be discussed with the instructor.

For all participation and large case studies, if you are sick and unable to submit your work within 24 (participation) or 48 hours (large case study), please contact BE ASAP.

- **Peer grading:** 2%, topic 2 will be peer graded (every group is evaluated by two other groups). Peer grading will be done with the help of grading rubric and constructive feedback is wanted. There is NO deferred option for peer grading.

- **Presentation**: 10%, each student presents at the end of term a topic about applied molecular biology of their own interest (5 min as individual).

- **Artistic assignment** (or: the unusual assignment): **3%** participation. Get creative: write a poem with our scientific words used in the class, paint a picture related to our topics, dance your favorite applied method or come up with your own creative idea and relate it to class content (video, podcast, meme…). Indicate on your submission if you are ok with me presenting your work to the class. Look for the submission drop box on Brightspace. Can be done anytime but no later than last day of class.

- **final exam**: 30%, cumulative, during final exam period

- **optional assignment**: **5%** participation. Think outside the box and develop your own future application. Create your own future application and write down how you would use specific molecules/molecular data/molecular techniques to improve current workflows/tasks…As long as this is theoretically possible, you get 5% participation points. Your exam grades will be adjusted accordingly (5% less for final exam). Can be done anytime but no later than last day of class.

How to be successful

Success is when you are happy and you learn. It is better to be active in the learning activities (participation case studies and discussions) than not participating at all and tuning out. Failure is not a bad thing: making mistakes is a good way to learn!

I strongly encourage you to **attend lectures, listen and take (hand written) notes**. Be active in all participation and large case studies, discuss and ask for help!

I want you to know that **off – task activities** like checking email, text messaging, checking social network sites, is **negatively affecting students' grades by more than 10%(Sana et al. 2013, Computers and education 62, 24-31). I strongly recommend that you turn off your off – task aps/programs during class time**

and study time to allow you to focus and not be distracted by social media and other non-course related sites!

Important Dates

In the UVic calendar you will find a fuller list of important dates, but the ones we have listed below are the ones that will matter to students in Applied Molecular biology.

Thursday Sept 7th: **First lecture** at 10 am

Monday Oct 2nd : **UVic closed, no lecture**

Monday Oct 9th : UVic closed, no lecture

Monday Nov 13th : **UVic closed, no lecture**

Thursday Nov 30th and Monday Dec 4th: **Student presentations**

Monday Dec 4th: deadline for **Artistic Assignment** (3% participation)

Deadline for **Optional Assignment** (5% participation)

December: Final exam during exam period

Stay healthy!

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. Mindfulness, meditation and yoga might help you to stay mentally healthy. Human societies have respected one day of rest in a 7 day week over hundreds of years. I believe that taking one day off per week is essential for your mental health and overall well being. Therefore, I am respecting your weekends (no emails or deadlines on weekends). Please also respect mine, thanks!

Avoid last minute study panic by working regularly throughout the term: we recommend that you spend at **least 2-3 hours studying after each lecture**! This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle.

If you are not feeling well, stay at home. If you miss class, you will be able to catch up by watching the video recording of live classes on Brightspace.

If I as instructor have to stay home, I will deliver course content by pre-recorded lectures.

General regulations:

We cannot change your grade for any reason, except if we have made an error calculating it. There is no extra work that you can do to raise your grade.

Failure to complete essential components of this course will result in a grade of "N" regardless of the cumulative percentage on other elements of the course.

Please read the appropriate section of the current UVic Academic Calendar regarding your rights and obligations.

You are expected to **observe UVic academic regulations and standards of scholarly integrity** especially with regards to plagiarism and cheating.

UVic and we as instructors are committed to promoting, providing and protecting a supportive and safe learning and working environment for you and us.

I hope that you are enjoying a great term with Applied Molecular Biology!

UVic support centers:

If you have any **technical issues** using Brightspace, please contact the **computer help desk** via email (helpdesk@uvic.ca)

Support Connect: offers short term solution focused counselling, available 24/7 help by phone or online. Supported by counsellors, consultants and life coaches.

https://www.uvic.ca/student-wellness/wellness-resources/supportconnect/index.php

Student Wellness Centre to support students' mental, physical and spiritual health by a team of counsellors, nurses, physicians, spiritual care providers.

https://www.uvic.ca/student-wellness/index.php

Centre for Accessible Learning (CAL): promote educational accessibility for students with disabilities and chronic health conditions. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

https://www.uvic.ca/accessible-learning/index.php

Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being. Supporting Indigenous students.

https://www.uvic.ca/services/indigenous/

Office of Student life: student conduct, first year experience, Student mental health, Sexualized violence awareness,… :
https://www.uvic.ca/services/studentlife/index.php

Student support services: the office of registrar helps with academic concession, fee reduction appeals, room bookings,…
https://www.uvic.ca/registrar/students/index.php

Sexualized Violence Prevention and support: how to start conversations about consent, support on and off campus

https://www.uvic.ca/sexualizedviolence/

UVic Bounce: Stories about resilience and how we stand up again after falling.

https://uvicbounce.ca/