

BIOCHEMISTRY 401
Gene Expression in Eukaryotes CRN 20314
Course Outline: Spring 2022

We acknowledge and respect the lək'wəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

This classroom is one where everyone will be treated with respect, and we welcome individuals for all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability-and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class.

COURSE DELIVERY

This course will be delivered initially online using Zoom due to the COVID-19 pandemic. Face to face instruction will commence Monday, January 24. Course materials and student assessments will be delivered online through Brightspace. Students must sign in with their UVic accounts (yourname@uvic.ca) to access online sessions, course materials, and assessment materials.

LOCATION & TIME: MacLaurin Building D288, MR 10:00-11:20 am

Universal Washroom location: MAC A185

INSTRUCTORS:

Dr. Caren Helbing

Office: Petch 249

Office hours: TBA

email: chelbing@uvic.ca

Dr. Perry Howard

Office: Petch 207

Office hours: TBA

email: bcmb@uvic.ca

TOPICS:

Biochemistry 401 is an advanced study of gene expression in eukaryotes. Topics include gene structure, eukaryotic transcription, transcriptional regulation, and post-transcriptional processing with special emphasis on transcription factors and RNA dynamics with a discussion of the current literature highlighting the role of gene expression in disease and development.

Required reading:

Citations to review articles and papers for reading assignments will be available on Brightspace. Students will need to find the papers on-line and download the articles. All suggested papers are from journals that are subscribed to by UVic.

Date	Topic	Assessment
PART 1: Dr. Helbing, January 10 – February 17		
Jan 10	Challenges in scientific thinking and communication	
13	RNA polymerase complex and transcription factors	
17	Cis-regulatory elements	Lay summary assigned
20	Nuclear hormone receptors	
24	Transcription factor assays	Lay summary due (15%)
27	Transcription factor assays	Take home assignment 1 posted
31	Chromatin features affecting gene expression	
Feb 3	Transcript detection and bioinformatics approaches	Take home assignment 1 due (15%)
7	Transcript detection and bioinformatics approaches	Take home assignment 2 posted
10	Technique synthesis and scientific paper critique	
14	Technique synthesis and scientific paper critique	
17	Take home assignment 2 due (20%)	
21-25	Reading Break	
PART 2: Dr. Howard, February 28 – April 7		
Feb 28	Coordinating transcription and RNA processing	
Mar 3	Pre-mRNA splicing	
7	Alternative splicing	
10	Aberrant splicing and disease	
14	RNAPII decision making – ins and outs of sorting and processing	
17	RNAPII decision making – ins and outs of sorting and processing – transcript export	Take home assignment 3 posted
21	Post transcriptional control of gene expression-histone mRNA biogenesis	
24	Post transcriptional control of gene expression-RNAi	Take home assignment 3 due (25%)
28	Post transcriptional control of gene expression-RNAi	
31	Post transcriptional control of gene expression-nonsense mediated decay	
Apr 4	Post transcriptional control of gene expression-nonsense mediated decay Take home final assignment 4 posted (25%)	
7	Take home final assignment time	Take home final assignment 4 due Monday, April 18

UVIC GRADING SCHEME

A⁺	90 -100	B⁺	77 - 79	C⁺	65 - 69	F	< 50
A	85 - 89	B	73 - 76	C	60 - 64	N *	< 50
A⁻	80 - 84	B⁻	70 - 72	D	50 - 59		

* N grades

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

- *Lay summary and all four take home assignments*

Students must complete all five assessment pieces to be assigned a final grade.

Failure to complete one or more of assessments will result in a grade of "N" regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student's GPA as 0. The maximum percentage that can accompany an N on a student's transcript is 49.

DEPARTMENT INFORMATION AND POLICIES

1. The Department of Biochemistry and Microbiology upholds and enforces the University's policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.
2. Cell phones, computers, and other electronic devices must be turned off at all times during live class sessions unless being used for the purpose of connecting and engaging with the class.
3. No recordings of live lectures are permitted without permission of the instructor. However, many courses will be recorded by the instructor for accessibility for students unable to attend. If you do not wish to be recorded, contact your instructor to determine if alternative arrangements can be made.
4. Students and instructors are expected to assess their health daily and avoid campus if they are ill.
5. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.
6. Students are expected to be available for all exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction. Although students do not require documentation, students must contact their instructor and BCMB office (biocmicr@uvic.ca) with the reason for their absence within 48 hours after the midterm exam. The Department will keep a record of the absences. It is the responsibility of the student to ensure all required components are complete, and to arrange deferred exams/assignments with the instructor, which normally should occur within one week of the original exam date.
7. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss the exam with classmates. Similarly, students who reveal the contents of an examination to students taking an examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar). Students must abide by UVic academic regulations and observe standards of scholarly integrity (no plagiarism or cheating). Online exams must be taken individually and not with a friend, classmate, or group, nor can you access notes, course materials, the internet, or other resources without the permission of the instructor. You are prohibited from sharing any information about the exam with others. Use of unauthorized electronic devices and accessing the internet and class material during exams is prohibited unless permission is granted by the instructor. Instructors may use Browser Lockdown Software to block access during classes and exams.
8. Deferral of a final exam must be requested with an Academic Concession form and submitted directly to

Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor. Deferred final exams or spring term courses will be arranged through Undergraduate Records and must be written before the end of the summer term as stipulated in the University Calendar.

9. Requests for review/remark of a midterm exam must be made within one week of the exam being returned.
10. The instructor reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.
11. Supplemental exams or assignments will not be offered to students wishing to upgrade their final mark.
12. Anonymous participation in online classes is not permitted without permission of the instructor.

Important note about COVID-related stress

The current pandemic is placing added stressors- financial, mental, and physical- on everyone. Your wellbeing is of foremost importance. If you are experiencing difficulties coping, the University has resources to help. Please reach out to Counselling Services, the Centre for Academic Communication, or Learning Assistance Program for assistance.

Centre for Accessible Learning

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, approach the Centre for Accessible Learning (CAL) as soon as possible in order to assess your specific needs.

<https://www.uvic.ca/services/cal/index.php>

Course Experience Survey (CES)

We value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to us regarding the course and our teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to your [CES dashboard](#). You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. We will remind you nearer the time but please be thinking about this important activity.