BIOCHEMISTRY 401

Gene Expression in Eukaryotes CRN 20303

Course Outline: Spring 2021

Time and Place:

This course will be delivered as a combination of asynchronous prepared video lectures (Jan 11-Feb 4) and live online sessions conducted via Zoom (Feb 8 -April 8). Student assessments will be delivered online through Brightspace or by email. Students must sign in with their UVic accounts (yourname@uvic.ca) to access online sessions, course materials, and test materials.

LOCATION & TIME: Online synchronous sessions, MR 10:00-11:20 am

INSTRUCTORS:

Dr. Chris Nelson
Office: Petch
Office hours: Wednesdays 1-3pm, or by appointment
Email: cjn@uvic.ca

Dr. Caren Helbing
Office: Petch 249
Office hours: Wednesdays 1-3pm
email: chelbing@uvic.ca

Dr. Perry Howard
Office: Petch 207
Office hours: Wednesdays 2-4pm
email: phoward@uvic.ca

Tests are "open book". Students are allowed to use course notes and the recommended readings. Students must submit their own work in their own words. Students are not allowed to work in groups or use materials external to the course including internet resources. Students doing so will be in breach of the university's academic integrity policy.

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. The course is delivered in three parts which will conform approximately to the attached course outline, however some changes are possible.

PART 1: Dr. Nelson, January 11 – February 4

The RNA polymerase machinery and the regulation of gene activation including transcriptional initiation, elongation and spatial aspects of transcription.

Date	Format	Topic	Assessment	% of total mark
Jan. 11	Asynchronous L1	Introduction, Polymerases and perspectives		
14	Asynchronous L2	The DNA template	Take home assignment 1 posted, **Due Jan 25**	15%
18	Asynchronous L3	Transcription Factors		
21	Asynchronous L4	Transcriptional regulation of cell fate		
25	Asynchronous L5	Initiation		
28	Asynchronous L6	Elongation		
Feb 1	Asynchronous L7	Spatial aspects of transcription		
4	Administered online through Brightspace	Test 1	Class test 1	18%

PART 2: Dr. Helbing, February 8 – March 8

Coordinated, co-transcriptional processing including splicing and termination. An introduction to bioinformatics techniques used for gene expression analysis will include a practical take home assignment. This section of the course will be **primarily synchronous. Lectures will be synchronous online during the scheduled class time.** Reading assignments etc. will be asynchronous.

Date	Format	Topic	Assessment	% of total mark
Feb. 8	Synchronous	Bioinformatics applications		
11	Synchronous	Coordinating transcription and RNA processing	Take home assignment 2 posted, **Due Feb 25**	15%
15-19		Reading Break	No class	
22	Synchronous	Pre-mRNA splicing		
25	Synchronous	Alternative splicing		
Mar 1	Synchronous	Aberrant splicing and disease		
4	Synchronous	Aberrant splicing and disease		

8	Administered online through Brightspace	Test 2	Class test 2	18%

PART 3: Dr. Howard, March 11- April 12

RNA Pol II diversity, Export, Post transcription regulation of gene expression. This section of the course will be **primarily synchronous. Lectures will be synchronous online during the scheduled class time.** Reading assignments etc. will be asynchronous.

Grading:

Date	Format	Topic	Assessment	% of total mark
Mar 11	Synchronous	RNAPII decision making – in's and outs of Sorting and processing		
15	Synchronous	RNAPII decision making – in's and outs of Sorting and processing - Export		
18	Synchronous	Post Transcription control of Gene Expression-histone mRNA biogenesis	Take home assignment 5 posted, **Due March 25**	15%
22	Synchronous	Post Transcriptional Control of Gene Expression-RNAi		
25	Synchronous	Post Transcriptional Control of Gene Expression-RNAi		
29	Synchronous	Post Transcriptional Control of Gene Expression-nonsense mediated decay		
April 1	Synchronous	Post Transcriptional Control of Gene Expression-nonsense mediated decay		
5		Easter	No class	
8		Take home final exam	Comprehensive March 11-April 8 Due April 19th	19%

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:

Students must complete all 6 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. Many online 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. 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.

5. 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.

6. 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.

7. 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.

8. Requests for review/remark of a midterm exam must be made within one week of the exam being returned.

9. The instructor reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.

10. Supplemental exams or assignments will not be offered to students wishing to upgrade their final Mark.

11. Anonymous participation in online classes is not permitted without permission of the instructor.

Additional UVic Resources for students

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. 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.