BIOCHEMISTRY 403: BIOCHEMISTRY OF SIGNAL TRANSDUCTION
COURSE OUTLINE – FALL 2018

Biochemistry of Signal Transduction
The objective of this course is to examine in detail the biochemical basis of the transmission of molecular signals from a cell's exterior to its interior and how this can bring about changes in cellular behavior and gene expression. The course emphasizes the biochemical concepts underlying signal transduction and the types of experimental analysis that are employed to study signaling pathways.

Instructor: **Dr. Perry Howard**
Petch 207b, phoward@uvic.ca
Office Hours: Monday & Thursday 3:00 PM- 4 PM or by appointment

Schedule: Mondays and Thursdays, 10:00 am - 11:20 am, COR B143
Readings: Readings will be posted on the course spaces web site.

Topics (with approximate dates)

Dates important date in bold	Topic	Instructor
Sept 6	Introduction Principles of Signaling pathways	Howard
10, 13	Modular domains and components; Specificity SH2	Howard
17, **20**	; InfETQ59 Tm-4(s)]TETBT1 0 0 1 381.79 525.43 Tm3,a	

Student Evaluation:

Midterm Exams **(Oct 1, Nov 1)**:	40%
Final Exam (comprehensive):	50%
In class Assignments (4):	10%

There is no assigned text for the course; topics will be drawn from primary and review literature, assigned in class, and posted on the course website. Students are expected to complete the reading assignments and the material will be included in the midterm and final exams. There will be 3 in-class assignments research or reading assignments made throughout the course. Students must be present and participate in the class to receive a mark for these assignments. Students are expected to attend all the lectures, take notes, and participate in classroom discussions. Students are expected to attend all midterm exams on the specified dates. Late assignments will not be marked and given a grade of 0. The slides used for lectures will be provided on the website before class, however these should not be considered complete and students are responsible for all material presented in class.

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: Midterm 1 or 2; Final Exam

How we study cellular signaling: students should be able to articulate how different types of experiments are performed and what information is gained from different experiments. It is expected that students will be able to apply this knowledge to novel biochemical problems.

Experimental basis for pathway summaries: students are expected to be able to describe how we know given information about a pathway. For example, what is the experimental evidence supporting a given claim?

Modularity of molecular components of signaling pathways: students are expected to be able to identify and describe the function of the major domains discussed in class. They should have an appreciation for why proteins are organized into domains, and how this type of organization facilitates the evolution of multicellular organisms.

Regulation of pathway components: students are expected to be able to identify and describe the biochemical mechanisms of how pathways are turned on and off including allosteric mechanisms. They should be able to appreciate the type of information gathered from structural approaches and how genetic and molecular approaches are used to test molecular models. They should be able to apply this information to novel problems.

Fidelity and specificity of signaling: students should be able to describe mechanisms of how the cell achieves specificity in signaling pathways. They should appreciate that pathways are interconnected and form networks. A basic understanding of how network regulation is studied is expected.

Critical Thinking: students should be able to interpret and critically review primary literature in the field. They will demonstrate this ability through assignments and exams. Student should be able to identify the hypothesis or questions being addressed in a journal article, determine whether the appropriate experiments and controls have been applied, and describe the strengths and weakness of the article.

directly to Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor. Deferred final exams for 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.

6. Multiple choice scan sheets for machine scoring (bubble sheets) are considered the authentic exam answer paper and will be retained by the department for 1 year.

7. Professors may refuse to review/remark exams not written in indelible ink. In addition, requests for review/remark of a midterm exam must be made within one week of the exam being returned. Students are expected to promptly pick up midterm exams after marking has been completed, either in class or from the instructor.

8. Examination papers that have pages removed, or are mutilated will not be marked.

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