

**BIOCHEMISTRY 403: BIOCHEMISTRY OF SIGNAL TRANSDUCTION
COURSE OUTLINE – FALL 2014**

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.

Instructors: **Dr. Robert Burke**

Petch 236, rburke@uvic.ca

Office Hours: Monday & Thursday, 3:30 PM – 4:30 PM or by appointment.

Dr. Perry Howard

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Office Hours: Monday & Thursday 3:00 PM- 4 PM or by appointment

Schedule: Mondays and Thursdays, 10:00 am - 11:20 am, ECS 124

Readings: Readings will be posted on the course web site.

Topics (with approximate dates)

Dates	Topic	Instructor
Sept 4	Introduction - Principles	Burke
8, 11	TGF β Pathway	Burke
15, 18	Receptor Tyrosine Kinases and MAP Kinase Pathway	Burke
22, 25	JAK/STAT	Burke
29, Oct 2	Midterm 1	Burke
6, 9	Hedgehog, Wnt	Burke
16	Notch	Burke
20, 23	Lipid compartments and signaling, Introduction to modularity/lipid binding modules.	Howard
27, 30	Receptor tyrosine kinase regulation and the initiation of signaling.	Howard
Nov 3, 6	Midterm 2 Phosphotyrosine recognition and specificity	Howard
13	Modular allostery (BCR-ABL) example	Howard
17, 20	Activation of small GTPases (GEFs)	Howard
24, 27	GTPase activating proteins (GAPs)	Howard
Dec 1	Introduction to scaffolds; networks	Howard

Student Evaluation:

Midterm Exams (Oct 2, Nov 6):	40%
Final Exam:	50%
Assignments	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 several 1-page, research or reading assignments made throughout the course. We expect students 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

Failure to complete one or more of these elements 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 unless being used for a purpose relevant to the class. Students having a cell phone, tablet, or computer on their person during an exam will be assumed to have it for the purpose of cheating.
3. Any recordings of lectures may only be performed with written permission of the instructor, and are for personal use only. The instructor retains copyright to such recordings and all lecture materials provided for the class (electronic and otherwise); these materials must not be shared or reposted on the Internet.
4. Students are expected to be present for the midterm and final exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction, and students must provide appropriate documentation 48 hours after the midterm exam. 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 a deferred examination are considered to be in violation of the University of Victoria policy on academic integrity (see current University Calendar). 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 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.

5. Scan sheets for multiple choice exams (bubble sheets) will not be made available for review. Therefore, in addition to filling in answers on the scan sheet, students should also circle their answers in ink on their exam.
6. Professors may refuse to review/remark exams not written in 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.
7. Examination papers that have pages removed, or are mutilated will not be marked.