

# MOLECULAR BIOLOGY AND BIOCHEMISTRY

## MBB 424 - 3 / 724 - 3

### Membrane Transport Mechanisms Summer 2013

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**Instructor:** Dr. E.C. Young  
Office: SSB 7155

**Description/objectives/Format:** Cells employ a wide array of channels, carriers, and pumps to move specific molecules across membranes. Lectures in Part 1 of this course will discuss the structure and function of some examples of these molecular transport machines, focusing on the different experimental approaches which have been developed to help understand their mechanisms. This will introduce key concepts and techniques from biochemistry, physiology, and biophysics:

- passive, chemically-driven and gradient-driven transport
- selectivity and activation
- electrogenic transport and voltage-clamp techniques
- action of pharmacological agents
- single molecule analysis
- fluorescence and other spectroscopic techniques

In Part 2 of this course, students will use the knowledge gained in Part 1 to teach the class a 30-minute seminar on a research article, and will participate in discussions of articles presented by other students. Undergraduate students will write a research report, while graduate students will be tested on comprehension of articles in a Take Home Exam.

**Grading:**

Short Assignments - Part 1	20%
Midterm Exam on Part 1	25%
Class Exercises - Participation	15%
Part 2 Seminar	15%
Part 2 Research Report (undergrads)	25%
OR Take Home Exam (grads)	25%

Course structure and grading are subject to change depending on enrolment.

**Required texts:** This course is based on primary literature (journal articles), copies of which will be kept on Reserve in the Library.

**Recommended texts:** Foundation biochemistry textbooks (3rd-year level) are recommended as background.

**Prerequisites:** Prerequisites: MBB 321 AND MBB 322 AND either MBB 323 or CHEM 360. Students lacking the prerequisites may enroll with permission of instructor.

Students requiring accommodations for a disability must contact:

Centre for Students with Disabilities (778-782-3112 or e-mail: [csdo@sfu.ca](mailto:csdo@sfu.ca)).

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