

## Department of Biology Course Outline

### SC/BIOL 4151 3.00 Membrane Transport Fall 2016

#### Course Description

The fundamental properties of solute transport are presented by discussing active ion pumps, passive transporters and ion channels of bacteria, plants and animals. The role of transport in regulating the intracellular environment in animals and plants is emphasized.

Three lecture hours. One term. Three credits.

#### Prerequisites

Prerequisites: SC/BIOL 2020 3.00, SC/BIOL 2021 3.00. SC/BIOL 3010 3.00 and SC/BIOL 3110 3.00 strongly recommended as prerequisites or corequisites.

#### Course Instructors and Contact Information

Jean-Paul Paluzzi, PhD  
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Department of Biology  
Lumbers Building, Rm. 221/221A (lab/office)  
Email: [paluzzi@yorku.ca](mailto:paluzzi@yorku.ca)  
Website: [www.yorku.ca/paluzzi](http://www.yorku.ca/paluzzi)

**Office hours: Tuesday 2:30-3:30pm**

#### Schedule

When: Tuesday 1:00-2:30pm and Thursday 1:00-2:30pm

Where: LSB 101

#### Evaluation

##### Grading:

Group presentation	20%
Literature review	20%
Midterm (Oct. 25 <sup>th</sup> , 2016)	20%
Participation	5%
Final exam	35%

**Notes:** Course website: <http://moodle.yorku.ca>

NOTE: Final course grades may be adjusted to conform to Faculty grade distribution profiles.

## Important Dates

**Midterm test: October 25<sup>th</sup>, 2016**

**Rolling due dates for group presentations and literature reviews.**

**NOTE:** for additional important dates such as holidays, refer to the “Important Dates” section of the Registrar’s Website at <http://www.yorku.ca/yorkweb/cs.htm>

## Resources

**Textbook:** None – reading materials will be linked through the course website on Moodle.

## Learning Outcomes

Upon successful completion of this course, students should be able to:

- critically examine the mechanisms underlying transport
- understand the physiological relevance of membrane transport and its regulation
- develop the flexibility required to apply and integrate fundamental principles and mechanisms through selected examples or case studies to other transport processes.
- become familiar with the scientific language and literature describing transport mechanisms

## Course Content

- Ion channels and selectivity
- Gramicidin
- Aquaporins
- ATP-powered pumps
- ABC Transporters
- Transporters: Antiporters, symporters and uniporters
- Amino acid transporters
- Ammonium transport
- Voltage- and mechano-sensitive channels

## Experiential Education and E-Learning

Relevant supplementary e-learning materials will be linked through lectures posted on Moodle.

## Other Information

**Note:** All assignments are required to be submitted as a hard copy for grading and an e-copy for verifying originality (turnitin.com). Submissions that do not meet these requirements will receive a grade of zero.

## Course Policies

- Zero tolerance for missed presentations, assignments and/or midterm tests. Students who are absent will receive a grade of zero for that component of the course.
- Only medical-related absences from midterm will be considered and must be supported with York University approved documentation requirements. Grades will be made up in a format at the discretion of the course director.
- Email and discussion forum etiquette/policies: Use only your yorku email for all course correspondence. Emails received from non-yorku email addresses will not receive a response. Be sure to include your full name and student number in all email communications, etc.

## University Policies

### **Academic Honesty and Integrity**

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - [http://www.yorku.ca/spark/academic\\_integrity/index.html](http://www.yorku.ca/spark/academic_integrity/index.html)

### **Access/Disability**

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Students in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

### **Additional information is available at the following websites:**

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon –

<http://www.glendon.yorku.ca/counselling/personal-counselling/what-is-counselling/>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

### **Ethics Review Process**

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants*. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

### **Religious Observance Accommodation**

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at [http://www.registrar.yorku.ca/pdf/exam\\_accommodation.pdf](http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf)

### **Student Conduct in Academic Situations**

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - <http://secretariat-policies.info.yorku.ca/policies/disruptive-and-or-harassing-behaviour-in-academic-situations-senate-policy/>