

Department of Biology Course Outline

SC/BIOL 4151 3.00 Membrane Transport Fall 2022

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 (strictly enforced)

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 Instructor(s) and Contact Information

Jean-Paul Paluzzi, PhD
Associate Professor
Department of Biology
Lumbers Building, Rm. 221/221A (lab/office)
Email: biol4151@yorku.ca Website: www.yorku.ca/paluzzi

Office hours: Tuesday 2:30-3:30pm (or contact me to make an appointment)

Schedule

Lectures: The lectures for this course will be in-person. If lecture delivery changes temporarily to remote, lectures will be held on Zoom (either synchronously or asynchronously) and recordings will be posted on eClass.

When: Tuesday 1:00-2:30pm and Thursday 1:00-2:30pm (all times in Eastern Standard Time)

Where: Chemistry Building (CB) 115

Evaluation

Grading:

Group presentation	10%
Group topic summary sheet	5%
Literature review	20%
Midterm (Oct. 27 th , 2022)	25%
Participation	5%
Final exam	35%
Total	100%

At the discretion of the course director, final course grades may be adjusted to conform to Program or Faculty grades distribution profiles.

Important Dates

Reading week: October 8th-14th, 2022

Midterm test: October 27th, 2022

Rolling due dates for group presentations and literature reviews (based on assigned topics).

Drop Deadline: Nov. 11, 2022 (last day to drop without course on transcript)

Course Withdrawal: Nov. 12 to Dec. 7, 2022 (course still appears on transcript with 'W')

****NOTE:** for additional important dates such as holidays and reading days please refer to the "Important Dates" section of the Registrar's Website at <http://registrar.yorku.ca/enrol/dates>

Resources

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

Course website: <https://eclass.yorku.ca/course/view.php?id=65300>

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
- Further topics to be announced based on guest lectures

Experiential Education and E-Learning

Relevant supplementary e-learning materials will be linked through lectures posted on eClass and will include animations and other e-resources available with the official course textbook.

Other Information

Face masks are strongly encouraged for all in-person lectures and activities and at all other times when indoors. All students are strongly encouraged to complete the [YU Screen](#) every time you must come to campus, and do not come to campus if “yes” was answered to any of the screening questions.

Students must regularly visit the following link regarding operations and policies at York University during the pandemic: [YU Better Together website](#) (visit on a regular basis as it is updated often)

Technical requirements for taking the course:

Students will need to have a computer (tablets might limit access to material) with stable high-speed internet connection with webcam and microphone (for interacting during classes or group meeting sessions and/or live office hours if they aren't held in-person). As noted above, **lectures are scheduled in-person**; however, if remote lectures or meetings are necessary, including (but not limited to) answering questions in real-time (e.g. office hours) or holding remote lecture in the event course director can't be on campus (eg. failed YorkU screen). Any remote lecture sessions will be recorded and posted on eClass (students are not required to have webcam but encouraged for normal interaction during synchronous activities such as review sessions or office hours). Normally, student microphones and web cameras will be turned off during remote lectures to avoid disruptions.

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. Grades may be made up in a format at the discretion of the course director. Note: medical documentation is **not** required as per current Senate memo regarding academic activities during COVID-19 pandemic:*
<https://www.yorku.ca/secretariat/covid-19-information-and-decisions-pertaining-to-academic-activities/>
- *Use only the course-specific email (biol4151@yorku.ca) for all course correspondence*
- *Email and discussion forum etiquette/policies: Use only your my.yorku.ca 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.*

****Note:** All assignments are required to be submitted for grading as an e-copy for verifying originality (turnitin.com). Links for submissions will be available on eClass. Literature review submissions received late will be deducted 10% per day and submissions more than three days late will receive a grade of zero. Group presentation summary sheets submitted late will receive a grade of zero.

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/academicintegrity/>

Important A note from the Faculty of Science Committee on Examinations and Academic Standards: Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. The Faculty's Committee on

Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met, since the uploading students had been found in all cases to be willfully blind to the reasonable likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through Course Hero or One Class, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.

Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Scanning, sharing, uploading or publishing these documents constitutes copying, which is a breach of Canadian copyright law, and the breach is aggravated when scans are shared or uploaded to third party repository sites.

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:

Student Accessibility Services - <https://accessibility.students.yorku.ca>

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

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 and submit an accommodation request form <https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf> at least 3 weeks before the exam period begins.

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-andor-harassing-behaviour-in-academic-situations-senate-policy/>