

Department of Biology Course Outline

SC/BIO4370 "Neurobiology" 3.0 FALL 2021

Course Description

An analysis of recent advances in neurobiology. Will include the anatomical, molecular, cellular, and biochemical basis of brain functions. The neurobiology of diseases of the nervous system are also discussed.

Three hours a week. One term. Mondays/Wednesdays at 8:00 – 9:30 am (details to be announced on eClass/Moodle)

Prerequisites (strictly enforced)

Prerequisites: SC/BIOL 2020 4.00; SC/BIOL 2021 4.00; SC/BIOL 3060 4.00.
Course Credit Exclusion: AS/HH/SC/KINE 4512 3.00

Course Instructor(s) and Contact Information

Course Director: Dr. Georg R. Zoidl, Life Science Building, Office 323A, gzoidl@yorku.ca
Office Hours: arrange by email citing course ID

Due to ongoing Covid19 situation face to face meetings on Campus remain restricted. Email and Zoom meetings will be the only way to communicate with the Course Director.

Schedule/Course Format

The Course will have both synchronous and asynchronous components delivered as live/pre-recorded lectures posted on eClass (former name: Moodle). The official time slot allocated for in class activities will also be used when appropriate for Q/A sessions in which lecture content can be discussed. All students are welcomed to participate Mondays/Wednesdays 8:00 – 9:30 am (details to be announced on eClass/Moodle)

Technology Requirements

Students require a computer with internet access. Camera and audio capability (microphone), ability to stream online lectures, and Zoom conferencing are required.

Evaluation

The final grade for the course will be based on the following items weighted as indicated:

- 1x written midterm exam (online/eClass) (40% weight)
- 1x final exam (online/eClass) (60%)

The course is only considered complete when students have participated in ALL exams.

The date for the mid-term exam will be posted separately (eClass). The midterm exam will cover the content of the lectures prior to the exam. The exam will contain multiple choice questions as well as other question types. Details and examples will be posted in the eClass course module, and explained in class. The midterm exam will have 60 questions which need to be completed within 90min.

The scheduling of the final exam will be announced at a later time when this information becomes available. The final exam will include multiple choice questions as well as other question types. The exam will have 60 questions covering the entire content of all classes. The total time will be 90min.

Students who wish to discuss questions can do so after the exams to intensify and deepen the learning objectives of this course. Unfortunately, due to the restricted access to the YorkU campus during Fall term the only opportunity to discuss questions will be in Zoom meetings.

Grading: The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York (e.g., A+ = 9, A = 8, B+ = 7, C+ = 5, etc.). Tests will bear either a letter grade designation or a corresponding number grade (e.g. A+ = 90 to 100, A = 80 to 90, B+ = 75 to 79, etc.) (For a full description of York grading system see the York University Undergraduate Calendar - http://calendars.registrar.yorku.ca/pdfs/ug2004cal/calug04_5_acadinfo.pdf)

Posting of Grades: Grades for tests will be posted on the course website as soon as they are available. Please do not ask when they will be available as the answer will inevitably be "as soon as possible."

Missed Exams & Assignments

When an exam is missed for reasons outlined in Course Policies, the make-up exam will be scheduled in the week following the class exam. This make-up exam is ONLY offered once. Students that opt to not participate in make-up exams will earn 0 points towards the final grade. The exact time for make-up exams will be posted on eClass. Students have to register by email with the subject line: BIO4370 Make Up Exam. Make up exams will differ from the written exam. The make-up exams might include an oral exam component mediated by Zoom.

Students will receive 40% of their final grade before the drop date.

Important Dates

First day, last day, as well as dates of Tests/Exams/Assignments will be announced in class and using the eClass course website. Other important dates are accessible through web-based resources provided by York University for the student community.

It is the responsibility of the student to know them.

The sessional dates can be found at: <http://www.registrar.yorku.ca/enrol/dates/fw12.htm>

For additional important dates such as holidays, drop date, etc. visit the "Important Dates" section of the Registrar's Website at <http://www.yorku.ca/yorkweb/cs.htm>

Resources

Lecture contents and links to videos will be posted at eClass (former Moodle)

Suggested Texts:

1) Purves, D, Augustine, G.J., Fitzpatrick, D., Hall, W.C., LaMantia, A-S, McNamara, J.O. & White, L.E. **Neuroscience** (6th edition or newer editions) Sunderland, MA: Sinauer Associates Inc. ISBN-13: 978-0878936465

The suggested textbooks will be supplemented with other materials via the lecture when appropriate.

For students interested in additional information the following textbooks are recommended.

- Principles of Neural Science, Sixth Edition; ISBN - 13:9781259642234
- Principles of Neurobiology; ISBN-13: 978-0815346050
- Fundamental Neuroscience: ISBN-13: 978-1259642234

These textbooks are ideal for advanced undergraduate as well as graduate students in neuroscience

and neurobiology, edited and authored by some of the foremost leaders in the field, with comprehensive coverage of all areas of neuroscience. Please note that a considerable number of other excellent textbooks from various publishers exist and interested students are welcomed to explore these options. Feel free to consult with your course director. The Librarian at YorkU has been informed about the suggested textbooks and copies of the books mentioned above are available at the Library.

Learning Outcomes

Upon successful completion of SC/BIOL 4370 3.0, students should be able to:

- Describe the anatomy and cellular components of the nervous system
- Describe fundamental processes that generate, shape and maintain nervous systems
- Describe cellular signaling and neuronal circuits
- Explain fundamental processes in neuronal signal transduction from genes to systems
- Explain the functions of Ion Channels, Electrical and Chemical Synapses
- Explain the major concepts of Sensory Neuroscience in the areas of Visual System, Auditory System, Somatosensory System and the Chemical Senses
- Describe the major concepts and components of the Motor Nervous System including circuits in Brain Stem, Spinal Cord, Basal Ganglia and Cerebellum
- Explain Complex Brain Functions from Cells to Systems
- Use the process of scientific inquiry to make effective decisions/arguments about real-world topics related to the nervous system
- Compare state of the art technologies to investigate the Nervous System in Health and Disease

Course Content

Expanded Course Description

As individuals, we can identify colors we have seen, recall places we have visited or recognize familiar faces. We are able to perform simple or complex tasks as individuals or as teams in social networks. Day by day, our nervous system reliably enables us to respond to our environment executing adequate reactions and behaviors. This is facilitated through highly complex processes that occur when nerve cells communicate in our brains. For this purpose, neuronal networks exist with an enormous complexity of trillions of highly specialized cells. Understanding how communication within these networks is built, maintained and protected over a lifetime is one of the most important questions in Neurobiology and the focus of this class. Students will gain state-of-the art knowledge about how the brain operates from the level of molecules to cells, up to complex functions such as perception, learning and memory, which requires an understanding of interactions among large groups of neurons. Examples of human neurological disease conditions will be discussed whenever appropriate to exemplify the consequences of deficiencies in the nervous system.

Details of the course schedule and contents will be posted at the eClass Course website

Other Information

In order to be fair and consistent with regards to the entire class, individual grades are not negotiable. The Course Director will not provide “extra credit” assignments. Marks will not be “rounded” or “bell-curved”. Contact the Course Director or the Teaching Assistant about marks ONLY if there is a clear error in your grade (calculation, clerical, etc.) within ONE week of the test score being made available to you. In your email reference the Course and Exam date (see course policies below).

Course Director: gzoidl@yorku.ca
Teaching Assistant: to be announced

Course Policies

E-mail Policies and etiquette

I will try to respond to email within two working days, but this is not always possible. I may also answer your question in the next class meeting if appropriate. Questions and answers that I deem of interest to the entire class will be posted on the appropriate discussion board or sent via course announcements if urgent.

Emails that do not meet the requirements below will not be answered:

- o Use your @yorku.ca email address when emailing instructors and others within the university. Email from other sources may be filtered out and not reach the intended recipient.

- o SUBJECT LINE - Include the course code and brief indication of topic.

- o Lecture email example: BIO4370 – question regarding synapse

The course section is critical to ensure the appropriate instructor receives your message.

- o **Include your NAME and STUDENT NUMBER at the end of each email.**

- Remember, you are in a professional environment and thus all your written correspondence, including emails, should be professional. This means full sentences, proper grammar, NO text message lingo.

Missed Exams

- You **MUST email your course director** within TWO days (48 hours) of missing the exam (the sooner the better).

Due to the ongoing Covid-19 situation the following information has been posted on the University Website <https://myacademicrecord.students.yorku.ca/deferred-standing>

“Students are not required to submit a doctor’s note or an Attending Physician’s Statement in support of requests for deferred standing for courses impacted by the COVID-19 situation.

If you haven’t already done so, we strongly encourage you to connect with your course instructor(s) first to make other arrangements to complete outstanding work, as a deferred standing may not be necessary.”

My interpretation is as follows: Better safe than sorrow. This is a dynamic situation. Perhaps it might get useful at a later time to have at hand a valid and appropriately detailed **documentation** supporting the events (typically medical or emergency related). Documentation should cover the date of the missed test. Please visit the Universities policies and updates thereof.

Please be aware that circumstances not accommodated include, but are not limited to, schedule confusion, sleeping in, missing the bus, personal endeavors (including a job), and busy lives. Where appropriate and possible, makeup tests will be scheduled within a week after the missed exam. These may differ in format from the original test. Details will be provided in time.

- **All students** who do not complete (all) 100% of exams & assignments offered in this class must petition if they are seeking deferred standing. No student will be granted deferred standing by the instructor via a Deferred Standing Agreement Form (DSA). Students will have to seek deferred standing by submitting a petition to their home faculty. It will be the Petition Committee’s decision whether deferred standing is granted and, if deferred standing is granted, this committee will also set the deadline for writing the deferred examination.

- See “Deferred Standing Guidelines for Final Exam Only” on the course eClass site for further details.

Forum Code of Conduct:

Students are encouraged to participate in the online eClass forums to discuss course concepts, organize study groups, and ask questions relating to Biology. The discussion on the forums has typically been polite and respectful, and we hope this will continue. Students are expected to follow the code of conduct when using the eClass forums:

- i. Check to see if your question has already been posted. (You can search the forums – you don’t have to read each post!) If your question hasn’t already been asked, please post in the most appropriate area.

- ii. Use a clear, informative subject line. Try to be as specific as possible.

- iii. Post comments appropriate to the particular discussion. Off-topic posts may be moved or deleted.

- iv. Be respectful. Posts containing personal insults/ attacks/ intimidation/ profanity will be deleted. (It is also worth remembering that your instructors read forum posts!)

- v. Post only material relevant to BIOL4370. Other posts will be deleted.

- vi. While it is appropriate to engage in debate/ discourse on biological topics, such discussions should be respectful and evidence-based. Evidence should be from trusted sources – consult with the library if you are not sure! (See: <http://www.yorku.ca/webclass/module4a.html>)
- vii. Any posts which appear to violate our code of conduct may be edited, moved or deleted at the discretion of instructors/moderators. If posts give indications of violations of academic honesty or the York University student code of conduct, further action will be taken.

Recording Online Lectures:

Online lectures include images and material which are subject to **CANADIAN COPYRIGHT LAW**. Video/Audio recordings are restricted to use as a personal study aid. They are NOT sold, passed on to others, or posted online. Remember the lectures are the intellectual property of the professor and cannot be distributed without permission.

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 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:

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

Counselling & Disability Services at Glendon - <https://www.glendon.yorku.ca/counselling/>

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 [Examination Accommodation Form](#) at least 3 weeks before the exam period begins. The form can be obtained from Student Client Services, Student Services Centre or online at <https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.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-andor-harassing-behaviour-in-academic-situations-senate-policy/>