COURSE SCHEDULE
KINE 3670: Molecular and Cellular Neuroscience with Applications to Health.

Please note that this course depends on remote teaching and learning. There will be no in-class interactions or activities on campus.

TECHNOLOGY REQUIREMENTS:

Students will participate in **synchronous learning** via a web conferencing tool using **ZOOM** (https://yorku.zoom.us/signin). You will need a computer with webcam and microphone, or a smart device with these features, and **stable, high-speed internet connection**. You are expected to fully attend the virtual classes through video conferencing. **No ZOOM recording is allowed.**

TEXTBOOK: **Dale Purves**, George J Augustine, David Fitzpatrick, Lawrence C Katz, Anthony-Samuel LaMantia, James O McNamara, and S Mark Williams. "**Neuroscience**" 5th Edition.

Please see the York University Bookstore webpage (https://bookstore.yorku.ca) for ordering e-books and for information about free shipping of course books/kits to students with a Canadian address.

COURSE DIRECTOR: **Dr. Dorota Anna Crawford**
Email: dakc@yorku.ca

TEACHING ASSISTANT **Shalini Iyer**
Email: siyer@my.yorku.ca

TIME AND LOCATION: **Tuesdays/Thursdays 11:30AM – 1:00PM**
Lectures: will be delivered via **ZOOM**
Course website: lectures are available on **MOODLE**
Questions: You can send me your questions via email anytime
I will be available on ZOOM after each lecture for any questions

GRADING:		
	Midterm exam	**40%**
	Final Exam	**60%**

IMPORTANT INFORMATION ABOUT THE EXAMS:

Exam relevant material will consist of (i) the material covered in all lectures and power point slides and (ii) the corresponding material from the textbooks. **It is strongly advised that you attend our virtual classes.**

Exams may contain a mixture of multiple choice, true/false and short answer questions and will be available on Moodle. **Exam questions will be randomly shuffled for each student**.

There will be a **time limit** to complete the exam. Time begins once a student begins the exam. When the time expires, the exam will be automatically closed.

IF YOU MISS A MIDTERM OR FINAL EXAM for medical reasons

- **you are required to provide proper documentation and deliver a scanned copy to the course director NO LATER THAN 1 WEEK FOLLOWING THE EXAM**
- **documentation must be provided by a registered clinical psychologist, psychiatrist, or medical doctor indicating that you were indeed unable to attend on the specific date of the exam because of your particular problem**
- **Notes from counselors or alternative healing providers are not acceptable**

MISSED MIDTERM: If you missed the midterm and provided proper documentation a MAKE-UP EXAM will be scheduled by the course director on Moodle. The exam version may vary from the original midterm exam.

MISSED FINAL: Students who miss the final exam will be allowed to write a deferred exam **only once** if they provide proper documentation. Further extensions or accommodation will require students to submit a formal **petition** to the Faculty of Health.

Do not approach the course director to have your grade increased. THE ANSWER IS NO!! Any grade adjustments will be applied to EVERYONE, no special circumstances will be granted. No "extra assignments" will be available for anyone to write.

COURSE GOALS:

The course will help you to gain a deeper understanding of the basic molecular and cellular mechanisms of the brain, and their applications to various disease processes. The course covers topics ranging from neuronal structure and function, communication at the synapse, membrane receptors and intra- and intercellular signaling systems within the sensory, motor and memory systems. The course will also cover the cellular and molecular processes underlying neuronal development, including differentiation of nerve cells, migration of neurons, mechanisms of axonal growth and guidance, target recognition and synapse formation, and the basis of synaptic specificity. Applications to specific disease processes will be described to illustrate the clinical applications of basic neuroscience. This course will provide basic understanding of molecular mechanisms underlying brain dysfunctions that contribute to disorders of the nervous system and rationales for pharmacological treatments.

COURSE SCHEDULE:

Lecture 1	Course Overview
Lecture 2	Anatomy of the nervous system, MRI and PET (*Chapter 1 and Appendix*)
Lecture 3	Neurons and glia (*Chapter 1*)
Lecture 4	Resting membrane potential, Nernst and Goldman equation (*Chapter* 2, 4)
Lecture 5	Action potential. Saltatory conduction (*Chapter* 3)
Lecture 6	Multiple Sclerosis I – Symptoms Epidemiology Genes (*Lecture Notes*)
Lecture 7	Multiple Sclerosis II – Types of MS, stages & symptoms (*Lecture Notes*)
Lecture 8	Synaptic transmission I, Electrical and chemical synapses (*Chapter* 5)
Lecture 9	Synaptic transmission II, Postsynaptic receptors (*Chapter* 5)
Lecture 10	**MIDTERM EXAM (Lectures 2-9) – Tuesday, October 19**
Lecture 11	Neurotransmitters I: ACh, Myasthenia gravis (*Chapter* 6)
Lecture 12	Neurotransmitters II: GABA, Glutamate, Serotonine (*Chapter* 6)
Lecture 13	Neurotransmitters III: Catecholamines; Neurodegenerative disorders (*Chapter* 6)
Lecture 14	Drugs and addiction (selected sections *Chapter* 6, 29 *and Lecture Notes*)
Lecture 15	Molecular Basis of Schizophrenia (*Lecture Notes*)
Lecture 16	Learning and memory (*Chapter* 8)
Lecture 17	Memory (*Chapter* 31)
Lecture 18	Alzheimer's Disease (*Chapter* 31 *and Lecture Notes*)
Lecture 19	Lipid Mediators as unconventional neurotransmitters (*Lecture Notes*)
Lecture 20	Neurodevelopmental Disorders (*Lecture Notes*)
Lecture 21	Review
	FINAL EXAM (Lectures 11-20) – Exam session (TBA)

IMPORTANT DATES:

Sept 8	Classes Start
Oct. 9-15	**Reading Days**
Dec. 7	Classes end
Dec. 9-23	Examination Period
Sept. 21	Last date to add a course **without permission** of instructor
Oct. 5	Last date to add a course **with permission** of instructor

GENERAL COURSE INFORMATION

Useful links describing computing information, resources and help for students:

Student Guide to Moodle	https://lthelp.yorku.ca/student-guide-to-moodle
Computing for Students Website	https://student.computing.yorku.ca/
Student Guide to eLearning at York University	http://elearning-guide.apps01.yorku.ca/
Learning Skills Services	https://lss.info.yorku.ca/online-learning/
Zoom@YorkU User Reference Guide	http://staff.computing.yorku.ca/wp-content/uploads/sites/3/2012/02/Zoom@YorkU-User-Reference-Guide.pdf
Zoom@YorkU Best Practices	https://staff.computing.yorku.ca/wp-content/uploads/sites/3/2020/03/Zoom@YorkU-Best-Practicesv2.pdf

SPECIAL ACCOMMODATION

While all individuals are expected to satisfy the requirements of their program of study and to aspire to achieve excellence, the university recognizes that persons with disabilities may require reasonable accommodation to enable them to perform at their best. The university encourages students with disabilities to register with Student Accessibility Services to discuss their accommodation needs as early as possible in the term to establish the recommended academic accommodations that will be communicated to Course Directors through their Letter of Accommodation (LOA). ***Please let me know as early as possible in the term if you anticipate requiring academic accommodation so that we can discuss how to consider your accommodation needs within the context of this course.*** *Sufficient notice is needed so that reasonable steps for accommodation can be discussed. Accommodations for tests/exams normally require three (3) weeks (21 days) before the scheduled test/exam to arrange.*

ACADEMIC HONESTY AND INTEGRITY

In this course, we strive to maintain academic integrity to the highest extent possible. Please familiarize yourself with the meaning of academic integrity by completing SPARK's Academic Integrity module at the beginning of the course. Breaches of academic integrity range from cheating (i.e., the improper crediting of another's work, the representation of another's ideas as your own, etc.) to aiding and abetting (helping someone else to cheat). All breaches in this course will be reported to the appropriate university authorities, and can be punishable according to the Senate Policy on Academic Honesty (https://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/).

EPROCTORING

This course requires the use of online proctoring for examinations. The instructor may use an online proctoring service to deliver the exam(s), which would be administered through the Learning Management System (e.g. Moodle, Canvas, etc.). Students are required to have access to minimum technology requirements to complete examinations. If an online proctoring service is used, students will need to become familiar with it at least five days before exam(s). For technology requirements, Frequently Asked Questions (FAQs) and details about the online proctoring service visit – [https://registrar.yorku.ca/online-exams].

All students are expected to familiarize themselves with the following information, available on the Senate Committee on Academic Standards, Curriculum & Pedagogy webpage (see Reports, Initiatives, Documents) - http://secretariat.info.yorku.ca/files/CourseInformationForStudentsAugust2012.pdf

- Senate Policy on Academic Honesty and the Academic Integrity Website
- Ethics Review Process for research involving human participants
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation