

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

TEXTBOOK: Dale Purves et al. "Neuroscience" 7th Edition.
Day1Digital E-book (D1D) available on the course eClass (Moodle)

COURSE DIRECTOR: Dr. Dorota Anna Crawford
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TEACHING ASSISTANT: Sonia Vovan
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TIME AND LOCATION: Tuesdays/Thursdays 11:30AM – 1:00PM
Location: Stedman Lecture Hall C (SLH C)
Course website: lectures are available on **MOODLE**

GRADING:	Midterm exam	40%
	Final Exam	50%
	Quizzes	10%

IMPORTANT INFORMATION ABOUT THE EXAMS AND QUIZZES:

- **EXAMS:** Each exam will include all lectured material and material covered in corresponding chapters of the textbooks and posted articles. Exams will have **Multiple Choice** and **True/False** type questions. It is strongly advised that you attend all classes.
- **QUIZZES:** Quizzes will include material lectured prior to the quiz and include **True/False** type questions. Quizzes will not be cumulative. There will be 5 quizzes given at **unannounced times** in class throughout the term. Come to classes prepared. There will be **NO** make-up for any missed quizzes. Best 4 quizzes will be included in the final 10%.

IF YOU MISS THE MIDTERM OR FINAL EXAM for medical reasons

- **You are required to provide proper medical documentation 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 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 only **ONE MAKE-UP EXAM** will be scheduled by the course director. If you miss the make-up exam your grade will be 0%. 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 medical 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 OVERVIEW:

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 17 in class**
- Lecture 11** Neurotransmitters I: ACh, Myasthenia gravis (*Chapter 6*)
Lecture 12 Neurotransmitters II: GABA, Glutamate, Serotonin (*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 Molecular basis of learning and memory (*Chapter 7 and 8*)
Lecture 17 Memory (*Chapter 30*)
Lecture 18 Alzheimer's Disease (*Chapter 30 and Lecture Notes*)
Lecture 19 Lipid mediators and neurodevelopment (*Lecture Notes*)
Lecture 20 Diagnostic and research methods for studying brain disorders (*Lecture Notes*)
Lecture 21 Review

FINAL EXAM (Lectures 11-20) – During Exam Session

IMPORTANT DATES:

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| Sept 6 | Classes Start |
| Oct. 7-13 | Reading Days |
| Dec. 5 | Classes end |
| Dec. 7-21 | Examination Period |
| Sept. 20 | Last date to add a course without permission of instructor |
| Sept. 28 | Last date to add a course with permission of instructor |
| Nov. 8 | Last date to drop course without receiving a grade |

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/

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/>).

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