Re the WESTERN UNIVERSITY
LONDON, CANADA

2015-2016

Neuroscience 2000, Section#001
Introduction to Neuroscience

1.0 CALENDAR DESCRIPTION

A comprehensive introduction to the neurosciences. Topics include molecular and cellular properties of neurons; neural plasticity; development of the brain and nervous system; sensory, motor and integrative systems; neural mechanisms of behaviour and cognition, including memory, language, and consciousness. Molecular and genetic techniques, electrophysiological recording, and brain imaging methods will be examined.
Antirequisites: None
Prerequisite: Psychology 1000 or the former Psychology 1200 with a minimum mark of 60%; either Biology 1001A or 1201A with a minimum mark of 60%; and either Biology 1002B or 1202B with a minimum mark of 60%.
3 lecture/discussion hours, 1.0 course

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2.0 COURSE INFORMATION

Faculty

Instructor:	Dr. Brian Corneil (Course Manager)
Office:	RRI 1250D
Phone Number:	519-663-5777 x24132
E-mail:	bcorneil@uwo.ca
Office Hours:	after class or by appointment

Instructor:	Dr. Kevin Johnston
Office:	RRI EB-10
Phone Number:	519-663-5777 x24226
E-mail:	kjohnst9@uwo.ca
Office Hours:	after class or by appointment

Instructor:	Dr. Stephen G. Lomber
Office:	SSC 9232
Phone Number:	519-663-5777, x24110
E-mail:	steve.lomber@uwo.ca
Office Hours:	after class or by appointment

Instructor:	Dr. Jenn Hoshooley
Office:	V121, Huron College
E-mail:	jhoshooley@gmail.com
Office Hours:	after class or by appointment
Teaching Assistant (Fall 2015):	Sahand Babapoor-Farrokhran
Office:	RRI
E-mail:	sahand.babapoor@gmail.com
Office Hours:	after class or by appointment
Teaching Assistant (Winter 2016):	Igor Angelovski
Office:	UH
E-mail:	iangelov@uwo.ca
Office Hours:	after class or by appointment
Time and Location of Lectures:	Wednesday 9:30-11:20 AM MSB 384
Time and Location of Tutorial:	Friday 9:30-10:20 AM MSB 384

3.0 TEXTBOOKS

Required: Neuroscience: Exploring the Brain (either the 3rd or 4th Edition)
By Mark F. Bear, Barry W. Connors, and Michael A. Paradiso
Lippincott, Williams & Wilkins, 2007 (3rd Edition; may be available used at the Bookstore) or 2016 (4th Edition)

4.0 COURSE OBJECTIVES

The course is divided into three sections:

1) Foundations of the Nervous System
2) Functional Systems
3) The Brain and Behavior

The course begins with the study of nerve cells: their structure, the propagation of nerve impulses and transfer of information between nerve cells, the effects of drugs on this process, and the development of nerve cells in the brain and spinal cord. We also examine the overall structure of the nervous system and its development. We then move onto functional sensory systems such as vision, hearing, touch, smell, balance, and taste, and motor control. We will discuss how physical energy such as light is converted into neural signals, where these signals travel in the brain, and how they are processed. We will cover how the brain controls movement from a bottom-up perspective, beginning with the spinal cord and muscle contraction, moving through integrative control by the brainstem, cerebellum, and basal ganglia, and finishing with considerations of the cortical control of movement. Finally, we will study eating & drinking, language, attention, sleep, consciousness, mental illness, emotion, learning and memory. From this course, you should obtain a solid understanding of the basics of brain function and neuroscience.

Goals:

- Learn the structure and function of our nervous system.
- Learn how our brain compresses and analyzes incoming information
- Learn how the brain controls movement
- Learn the beauty and sophistication of our neurological systems

5.0 EVALUATION

Exams (80%): There will be four exams during the course. Each exam will be worth 20% of your final grade and will cover the material from the 6-7 lectures preceding the exam. There will not be a cumulative final exam. Material covered on the exams will be taken from the assigned readings and class lectures, as well as any additional material that may be provided. Exams will consist of 50 multiple choice questions.

Assignments (20%): Two assignments, worth 10% each, will be completed during the course. One, a written critique of neuroscience as portrayed in the movies, will be due in December. The second, a simulated "public service announcement" video, will be due in March. Details about the two assignments will be conveyed at the first tutorial meeting on September 11th, 2015.

Missed Exams: Missed exams may be made up only if you: **1)** have a valid excuse, **2)** notified Dr. Corneil **BEFORE** the exam, and **3)** provided appropriate documentation to an academic counselor in your home faculty (e.g., documentation that you sought medical assistance, a newspaper clipping of the obituary of your dead relative, photographs of you with the space aliens that conveniently abducted you the evening before the exam).

The Western University grading guidelines, are as follows (see http://www.uwo.ca/univsec/handbook/general/grades_undergrad.pdf):

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work that is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

6.0 TEST AND EXAMINATION SCHEDULE

Exam 1	Fri, Nov 6th, 2015 – 9:30, Location: EC 2168A/B (Elborn College; note location)
Exam 2	TBD, During December Exam Period
Exam 3	Fri, Feb 26th, 2016 – 9:30, Location: EC 2168A/B (Elborn College)
Exam 4	TBD, During April Exam Period

7.0 LECTURE, READING AND TUTORIAL SCHEDULE

Fall Term

Date	Lecture	Lecture Topic	Lecturer	Chapter Readings
Sept 11		*Tutorial: Introduction/Assignment Outline*		
Sept 16	1	Nervous System Overview	Corneil	1
Sept 18		*Tutorial: Guest Speaker*		
Sept 23	2	Neurons and Glia	Johnston	2
Sept 25		*Tutorial: Brain Day*		
Sept 30	3	The Neuronal Membrane at Rest	Johnston	3
Oct 2		*Tutorial: Guest Speaker*		
Oct 7	4	The Action Potential	Johnston	4
Oct 9		*Tutorial: Backyard Brains*		
Oct 14	5	Synaptic Transmission	Johnston	5
Oct 16		*Tutorial: Backyard Brains*		
Oct 21	6	Neurotransmitters and Receptors	Johnston	6
Oct 23		*Tutorial: Exam Review*		
Oct 28	7	Gross Structure of the Nervous System	Lomber	7
Oct 30		*Fall Study Break – No Tutorial*		
Nov 4	8	Development of the Nervous System	Lomber	7
Nov 6		**Exam 1**		
Nov 11	9	The Eye	Lomber	9
Nov 13		*Tutorial: The Eye/Ophthalmoscope*		
Nov 18	10	The Visual System	Lomber	10
Nov 20		*Tutorial: Receptive Fields*		
Nov 25	11	The Somatosensory System	Lomber	12
Nov 27		*Tutorial: Peer-Review Day*		
Dec 2	12	Auditory and Vestibular Systems	Lomber	11
Dec 4		*Tutorial: Getting involved in research (Guest)*		
Dec 9	13	Olfaction and Gustation	Lomber	8
TBD		**Exam 2** – During Exam Period		

Winter Term

Date	Lecture	Lecture	Lecturer	Chapter Readings
Jan 6	14	Spinal Control of Movement	Corneil	13
Jan 8		*Tutorial: Introductions and Assignment outline*		
Jan 13	15	Central Control of Movement	Corneil	14
Jan 15		*Tutorial: TMS/EMG/MEP*		
Jan 20	16	Modulation of Movement: Basal Ganglia & Cerebellum	Corneil	14
Jan 22		*Tutorial: Prism Goggles Demo*		
Jan 27	17	Eye Movements	Corneil	
Jan 29		*Tutorial: Eye movements*		
Feb 3	18	Visceral System, ANS, and Hypothalamus	Corneil	15
Feb 5		*Tutorial: Neuroscience Myths*		
Feb 10	19	Motivated Behavior and Executive Control	Corneil	16
Feb 12		*Tutorial: Exam Review*		
Feb 17		*Reading Week – No Class*		
Feb 19		*Reading Week – No Tutorial*		
Feb 24	20	Sex and the Brain	Hoshooley	17
Feb 26		**Exam 3**		
Mar 2	21	Brain Mechanisms of Emotion	Hoshooley	18
Mar 4		*Tutorial: Presentations*		
Mar 9	22	Brain Rhythms and Sleep	Hoshooley	19
Mar 11		*Tutorial: Presentations*		
Mar 16	23	Language and Attention	Hoshooley	20 & 21
Mar 18		*Tutorial: Presentations*		
Mar 23	24	Mental Illness	Hoshooley	22
Mar 25		*Exam Review*		
Mar 30	25	Wiring the Brain	Hoshooley	23
Apr 1		*Good Friday – No Tutorial*		
Apr 6	26	Memory Systems	Hoshooley	24
TBD		**Exam 4** – During Exam Period		

8.0 STATEMENT ON ACADEMIC OFFENCES

Students are responsible for understanding the nature and avoiding the occurrence of plagiarism and other scholastic offenses. Plagiarism and cheating are considered very serious offenses because they undermine the integrity of research and education. Actions constituting a scholastic offense are described at the following link: http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf

The following steps to detect scholastic offenses. All multiple-choice tests and exams will be checked for similarities in the pattern of responses using reliable software, and records will be made of student seating locations in all tests and exams.

Possible penalties for a scholastic offense include failure of the assignment, failure of the course, suspension from the University, and expulsion from the University.

9.0 OTHER INFORMATION

OWL:
A copy of the syllabus and other important information will be posted on OWL. At least 48 hours prior to each lecture, an outline of the lecture will be posted and available for downloading and printing. These outlines will accumulate until the next exam, when they will be removed.

Attendance and Readings:
Your performance in this course will be greatly influenced by your attendance. Some material discussed in lecture is not covered in the textbook.

Cell Phones, etc.:
Cell phones, pagers, iPods, and other electronic devices, except laptops, have no place in class. Please do not bring them to class or turn them off. Any ringing cell phones will be answered by the lecturer.

Support Services:
Registrarial Services: http://www.registrar.uwo.ca
Academic Counseling (Science and Basic Medical Sciences):
http://www.uwo.ca/sci/counselling/index.html
USC Student Support Services: http://westernusc.ca/service
Student Development Centre: http://www.sdc.uwo.ca
Student Health Services: http://www.shs.uwo.ca/
Students that are in emotional/mental distress should refer to Mental Health@Western
http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help.

Undergraduate program in Neuroscience
For further information about the undergraduate program in Neuroscience, please see:
http://www.schulich.uwo.ca/bsc-neuroscience

No electronic devices, including cell phones, will be allowed during exams.