

## **MAMMALIAN NEUROANATOMY BIOM\*3000, WINTER 2012**

Lectures Monday, Wednesday, Friday 10:30-11:20AM; OVC Room 1642  
Lab Wednesday or Thursday 2:30-4:20PM; OVC Room 3655  
Final Exam Saturday April 14, 2012; 11:30-1:30

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### Course Description

The primary objective of this course is to develop a comprehensive understanding of the organization of the nervous system. This includes the major cell types that are found in the nervous system, an overview of the physiological principles involved in brain function as well as a 3-D and histological examination of the brain and spinal cord through laboratory dissections and tutorials. Emphasis in this course is placed upon integrating this information into clinical cases to establish a deep understanding of the functional relationship between anatomy, physiology and behaviour.

### Course Goal

The goal of BIOM\*3000 is to provide students with a detailed experimental and clinical-based knowledge of the functional organization in the mammalian nervous system. It also serves as a key preparatory course for students who are doing 4<sup>th</sup> year independent research projects in a neuroscience lab.

### Teaching Strategies

BIOM\*3000 involves a gross as well as microscopic study of the nervous system. It includes (1) microscopic examination of the neuron, (2) 3-D examination of the brain and spinal cord, (3) microscopic study of transverse sections. The main principles of neuroanatomy will be presented in lectures on Monday and

Wednesday while Friday will be reserved for clinical cases and inquiry-based learning. Recommended textbooks as well as journal articles and laboratory exercises will support the lectures.

Course Content

Lecture topics to include: Neurons and Neural Physiology, Gross Organization of the nervous system including: spinal cord and associated tracts, the cranial nerves, brain stem, cerebellum, cerebral cortex, basal ganglia, hypothalamus, thalamus and limbic system along side current topics in neuroanatomical structure-function relationships.

Office Hours

Office hours are **BY APPOINTMENT ONLY**. Please see Emily Gilbert after class or contact her via e-mail to set up an appointment.

Laboratory Schedule

<u>Date</u>	<u>Wednesday or Thursday</u>
January 11-12	No Lab
January 18-19	Introduction and Histology
January 25-26	TBA
February 1-2	Gross Anatomy
February 8-9	Brainstem
February 15-16	Spinal Cord
February 22-23	READING WEEK
March 29-1	Cranial Nerves

March 7-8	Cerebral Cortex/Basal Ganglia
March 14-15	Cerebellum
March 21-22	Lab Exam Review
<b>March 28-29</b>	<b>LAB EXAM</b>

**Note: Please advise the instructor immediately if you wish to drop the course so that people on the waiting list can be admitted and lab groups can be re-organized.**

Schedule and Lecture Information

- 1) All tests and assignments are indicated in bold face and are described under the method of evaluation below.
- 2) Lectures will be given by Emily Gilbert or occasionally by a guest speaker.
- 3) Lectures will provide an overview as well as details of specific structures and functions of the nervous system. Printable copies of these lectures will be posted on Courselink the night before the lecture (or earlier). You may find it useful to bring copies of these lectures to class.

**Laboratory Information**

Laboratories will provide an overview of the anatomical structures of the brain and spinal cord. In-depth exposure to the structures comprising the nervous system will be presented. It is expected that students will be able to locate structures in their 3-D locations as well as with respect to other structures. Students will be dissecting sheep brains and will be in groups of two.

Required Items

1. In the laboratory a clean lab coat and gloves are required.
2. The following dissection equipment will be useful: blunt probe, scalpel handle and several blades (not #11), heavy scissors (semiblunt or blunt/sharp points), tissue forceps (1X2 teeth), dressing forceps. Cost: approx \$25, OVC Bookstore.
3. Students are required to print off the .PDF files listed under lab materials and bring them to the lab each week.

**Lab Safety is a PRIORITY at all times.** In order to ensure the safety of all participants the safety procedures and guidelines provided by the lab instructors must be followed. It is the responsibility of each student to attend the safety orientation at the beginning of the first lab. Please read the information regarding lab safety and etiquette provided in the first lab. You will be required to sign an Affirmation of Safety Awareness sheet before you can begin the first lab. Also, make yourself aware of the MSD Sheets.

**\*\*If you injure yourself during the lab and require medical attention, please notify one of the instructors\*\***

Dissection Specimens

*Fresh and preserved animals and/or animal tissue are used for teaching purposes in this course. All animals are protected by the Animals for Research Act of Ontario (1980), the Guidelines for the Care and Use of Experimental Animals (Canadian Council on Animal Care), and the Animal Care Policies of the University of Guelph.*

**Method of Evaluation**

<b>1. Midterm Test</b>	<b>20%</b>	<b>February 17, 10:30: Short Answer</b>
<b>2. Practical Exam</b>	<b>15%</b>	<b>March 28-29, 2:30: Bell Ringer</b>
<b>3. Case Studies</b>	<b>15%</b>	<b>Case Study 1: (Jan 27<sup>th</sup>, 30<sup>th</sup>, Feb 3<sup>rd</sup>, 10<sup>th</sup>) Case Study 2: (March 16<sup>th</sup>, 19<sup>th</sup>, 23<sup>rd</sup> or 30<sup>th</sup>)</b>
<b>4. Final Exam</b>	<b>50%</b>	<b>April 14, 11:30-1:30: Short Answer and Essay Questions</b>
<b>TOTAL</b>	<b>100%</b>	

The **midterm test** will consist of 40, short answer questions covering all of the material in the first six weeks of the course including lectures, cases and laboratory assignments

The **practical exam** will be a “bell ringer” style of exam and will consist of 20 stations. Each student will start at a specific station and move in a specific order from station to station at 90 second intervals. Each station will require the identification of a neural structure that is illustrated in either a microscopic slide or

whole brain specimen. A supplementary question may also be asked to test your functional understanding of the structure.

The **case studies** will be evaluated through self, peer evaluations as well as through the required presentation. Each group will be assigned 2 different cases throughout the course of the semester and will be expected to present both cases in 2 in-class symposiums. Peer, instructor and TA evaluations will evaluate the presentations.

The **final exam** will cover the material of the entire course. It will include short answer and essay questions that test your knowledge of functional organization of the nervous system and its clinical applications. You may be asked to label a diagram, identify structures in transverse sections. You may also be asked to trace specific neural pathways from the point of sensation to the point of perception.

WHEN UNABLE TO MEET A COURSE REQUIREMENT DUE TO ILLNESS  
PLEASE ADVISE YOUR PROGRAM ADVISOR AS WELL AS THE  
INSTRUCTOR OF THE COURSE.

### **Academic Notes**

#### **Students with Disabilities**

All students registered with the Centre for Students with Disabilities (CSD), please inform Emily Gilbert (in private, or via e-mail), with a request for your special needs in exams etc. This information will be kept entirely confidential and is simply to enable us to assist you as much as possible. Any students requesting such assistances should register with CSD first.

#### **Electronic Etiquette**

The use of laptop computers and other portable electronic devices can be very disruptive to the classroom environment. Such devices are permitting in the classroom provided that they are used strictly in support of class related activities (e.g. note taking) and are not disturbing to the other students. Please note that e-mailing, electronic and text messaging, other forms of telephone and electronic communication, and the use of other electronic devices (e.g. portable music devices and cell phones) are NOT PERMITTED during the lectures or laboratory periods. Students that fail to comply with this request will be asked to leave the classroom. Please note that electronic audio and/or video recordings of the lectures and laboratories are not permitted without the signed consent of the course coordinator. The use of electronic devices during exams is strictly prohibited.

### Academic Consideration

When you find yourself unable to meet an in-course requirement due to illness or compassionate reasons, please advise Emily Gilbert in writing (or via e-mail), with your name, address and e-mail contact. Where possible, this should be done in advance of the missed work or event, but otherwise just as soon as possible after the due date, and certainly no longer than ONE WEEK later.

If documentation of your inability to meet that in-course requirement is necessary, the course instructor will request it of you. Students who find themselves unable to meet course requirements by the deadlines or criteria expected because of medical, psychological or compassionate circumstances beyond their control should review the regulations on academic consideration in the calendar.

<http://www.uoguelph.ca/registrar/calendars/undergraduate/pdffiles/calendar.pdf>

and discuss their situation with the instructor or program counselor.

### Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and enjoins all members of the University community-faculty, staff and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. The University of Guelph takes a serious view of academic misconduct and it is your responsibility as a student to be aware of and to abide by the University's policy. Included in the definition of academic misconduct are such activities as cheating on examinations, plagiarism, misrepresentation, and submitting the same material in two different courses without written permission. To better understand your responsibilities, read the Undergraduate Calendar at

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/pdffiles/index.shtml>;

see also <http://www.academicintegrity.uoguelph.ca/>.

You are also advised to discuss any questions you may have with your course instructor, TA or academic counselor

Students should be aware that faculty has the right to use software to aid in the detection of plagiarism or copying and to examine students orally on submitted work. For students found guilty of academic misconduct, serious penalties, up to and including suspension or expulsion can be imposed.

## Textbooks and Resources

There is no textbook for this course that adequately covers all of the necessary material which is why there is no REQUIRED textbook. Students are expected to use resources available through the library to back up the lectures as well as the .PDF files for labs which will be provided each week on CourseLink and will serve as a guideline for the amount of detail necessary. Several anatomical texts and other resources may be useful. A few examples are provided below.

- 1) Essentials of the Human Brain -Nolte
- 2) Clinical Neuroanatomy for Medical Students –Snell
- 3) Netter’s Atlas of Human Neuroscience- Felton
- 4) Gray’s Anatomy 35<sup>th</sup> edition
- 5) Neuroanatomy-Crossman and Neary
- 6) Sheep Atlas: <https://www.msu.edu/~brains/brains/sheep/index.html>
- 7) Electronic journals available from the library site eg. Journal of Comparative Neurology, Journal of Neuroscience, Brain, Cerebellum etc.....