

## Department of Anatomy and Cell Biology 3200 B Functional Human Neuroanatomy

### Course Syllabus for Fall 2022



Western University is committed to a **thriving campus**; therefore, your health and wellness matter to us! The following link provides information about the resources available on and off campus to support students: <https://www.uwo.ca/health/> Your course coordinator can also **guide you** to resources and/or services should you need them.

#### 1. Technical Requirements:



Stable internet connection



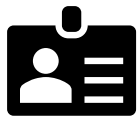
Laptop or computer

#### 2. Important Dates:



Classes Begin	Classes End	
Thursday, September 8, 2022	Thursday, December 8, 2022	
* November 12, 2022: Last day to drop a first-term half course without academic penalty		
Reading Week	Study day(s)	Exam Period
October 31–November 6	December 9	December 10–22

#### 3. Contact Information



Course Coordinator	Contact Information
Dr. Michele Barbeau	mbarbeau@uwo.ca
Instructors	Contact Information
Dr. Michele Barbeau	mbarbeau@uwo.ca
Dr. Raj Rajakumar	raj.rajakumar@schulich.uwo.ca
Dr. Derek Mitchell	dmitch8@uwo.ca

## 4. Course Description and Design

**Delivery Mode:** This course uses in-person lectures which are recorded. All labs are in-person.

An introduction to the central nervous system (CNS). Topics include: the basic structures and functional interconnections between subdivisions of the brain, spinal cord and autonomic nervous systems; CNS development; structures that protect and support the brain; and clinical conditions associated with disruption of the CNS. Demonstrations reinforce lecture material.

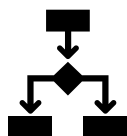
**Antirequisite(s):** [Anatomy and Cell Biology 2221](#), [Health Sciences 3300A/B](#), [Kinesiology 3222A/B](#), [Rehabilitation Sciences 3062A/B](#), the former Anatomy and Cell Biology 3319.

**Prerequisite(s):** Registration in third or fourth year. A background in introductory biology is recommended.

Extra Information: 2 lecture hours, 1 demonstration hour, 0.5 course. This is not a laboratory course.

Senate regulations regarding the student's responsibility regarding requisites:

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.



### Timetabled Sessions

Component	Date(s)	Time
Lecture – in-person and recorded	T/Th	10:30-11:20 SEB 2200
Lab/Tutorial Session – in-person	F	1hr – 930am – 2:30pm

- Asynchronous pre-work must be completed prior to laboratory sessions
- Attendance at laboratories is required
- A recording will be provided of lectures
- Closed captioning will be provided through Echo360 on video recordings

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

## 5. Learning Outcomes



Upon successful completion of this course, students will be able to:

- Identify the major structures and general function of the brain.
- Explain how different structures of the CNS integrate to form functional circuits that control important brain functions such as memory, emotions, motor control etc.
- Develop an ability to predict and explain the anatomical basis for a number of CNS disorders

## 6. Course Content and Schedule

### Lectures:

Tuesday and Thursday 10:30-11:20 am. Lectures will be in-person from SEB 2000 and broadcast live using Echo 360 virtual classroom software. Students may choose to attend in-person, live online or use the recording at a later time.

### Laboratory Demonstrations:

Labs are held in Dental Sciences Building (DSB) Room 2005 on Fridays, 9:30-3:30 (5 sections; 50 minutes each). **Students are expected to come prepared to the demonstrations having reviewed the Lab Outline and viewed pre-lab videos (2 each week).** Attendance at demonstration sessions is expected.

### Laboratory videos have been created using human cadaveric material.

This course is privileged to be able to provide human cadaveric specimens for student learning. These specimens have been donated by individuals through Western's Body Bequeathal Program and hence, we expect the utmost of respect for them by our students. **Photographing the specimens or sharing videos for use outside of this course is strictly prohibited.** Several resources have been suggested to allow students to review cadaveric specimen images outside of the lab.



### Laboratory Demonstrations

Term 1 Labs		
Lab 1	Sept 9	Terminology and Introduction to the Brain
Lab 2	Sept 16	Histology of the CNS
Lab 3	Sept 23	Skull and Meninges
Lab 4	Sept 30	Cerebral Hemispheres and Blood Supply
Lab 5	Oct 7	Basal Ganglia and Diencephalon
Lab 6	Oct 14	Brainstem and Cerebellum
	Oct 21	Lab Exam
Term 2 Labs		
Lab 7	Oct 28	Taste, Olfaction and Autonomic System
	Nov 4	Fall Reading Week – No Lab
Lab 8	Nov 11	Spinal Cord
Lab 9	Nov 18	Higher Function, Limbic System and Vision
Lab 10	Nov 25	Hearing, Language and Equilibrium
	Dec 2	Lab Exam

## Lectures

Dates	Term 1 Topics	Lecturer
Thursday Sept. 8	L1 Embryonic Development of the Germ Layers	Barbeau
Tuesday Sept. 13	L2 Development of the CNS	Barbeau
Thurs Sept. 15	L3 Histology of the CNS	Barbeau
Tues Sept. 20	L4 Introduction to the CNS	Barbeau
Thurs Sept. 22	L5 Osteology of the Skull	Barbeau
Tues Sept. 27	L6 Meninges and Ventricles	Rajakumar
Thurs Sept 29	L7 CNS Blood Supply	Rajakumar
Tues Oct. 4	L8 Cerebral Hemispheres	Rajakumar
Thurs Oct. 6	L9 Basal Ganglia	Rajakumar
Tues Oct. 11	L10 Diencephalon	Rajakumar
Thurs Oct. 13	L11 Brain Stem and Cranial Nerves	Rajakumar
Tues Oct. 18	L12 Brain Stem and Cerebellum	Rajakumar
<b>End of Term 1</b>		
<b>Friday Oct. 21</b>	<b>Mid Term Exam 7-900pm</b>	
<b>Term 2 Topics</b>		
Thurs Oct 20	L13 Autonomic Nervous System and Homeostasis	Guest
Tues Oct 25	L14 Olfaction and Taste	Guest
Thurs Oct 27	L15 Spinal Cord	Barbeau
<b>Tues Nov 1</b>	<b>Fall Reading Week – No Class</b>	<b>Tues Nov 1</b>
<b>Thurs Nov 3</b>	<b>Fall Reading Week – No Class</b>	<b>Thurs Nov 3</b>
Tues Nov 8	L18 Ascending Sensory Pathways	Rajakumar
Thurs Nov 10**	L17 Descending Motor Pathways	Rajakumar
Tues Nov 15	L18 Higher Function and Limbic System	Rajakumar
Thurs Nov 17	L19 Vision I	Rajakumar
Tues Nov 22	L20 Hearing and Language	Rajakumar
Thurs Nov 24	L21 Vestibular System	Rajakumar
Tues Nov 29	No Class	
Thurs Dec 1	L22 Neurological Disorders of the CNS	Mitchell
Tues Dec 6	L23 Neuropsychiatric Disorders of the CNS	Mitchell

\*\* Last day to drop a first term half course Nov 12.

## 7. Participation and Engagement

- Students are expected to participate and engage with content as much as possible



## 8. Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Component	Format	Weight	Date
Term 1 Exam	In-person	25%	Fri Oct 21 7:00-9:00pm
Term 2 Exam	In-person	25%	TBD - Dec. Exam Period
Term 1 Lab Assessment	In-person	12.5%	Oct 21 During lab time
Term 2 Lab Assessment	In-person	12.5%	Dec 2 During lab time
Lab Assignments (10)	Online	20%	Weekly
Quizzes (10)	Online	5%	Weekly

**Written Exams:** The written exams will be in the multiple choice format which will be graded using the Scantron system and may be examined by computer software to detect unusual coincidences in answer patterns that may indicate cheating. Make up exams may be a combination of multiple choice questions and short answer questions. Please review the UWO policy on Scholastic Offences. If you are unable to write the scheduled exam, please see Section 14 the policy and procedures for “Absence from Course Commitments” and “Special Examinations”. There is only 1 make up exam offered unless you have an approved direct conflict the date and time of the makeup. The Midterm Make up exam is scheduled for Thurs Oct 27 530-730pm. If you have an approved absence for the make up exam, the next opportunity to write a make up exam is May 3, 2023. Exams are not re-weighted in this course.



The **Lab Assessment** will be in a “bell-ringer” format. These assessments will be during the regularly scheduled lab times in DSB 2005. Students will have 1 min per question with scheduled rest breaks. More information will be released closer to the exam date. Please review the UWO policy on Scholastic Offences. If you are unable to write the scheduled exam, please see the Section 14 for the policy and procedures for “Absence from Course Commitments” and “Special Examinations”. Make up lab assessment dates are: Friday Oct 28, 830am, Thurs Dec 8 1030am. If you have an approved absence for the make up lab assessment, the next opportunity to write a make up exam is May 3, 2023. Lab Assessments are not re-weighted in this course.

**Weekly Lab Assignments** will be completed for each lab session and submitted on Friday by 11:55pm (EST). There is a grace period where late assignments will be accepted until Sunday at 11:55pm. After this time, a request to the course coordinator may be made to allow a late submission with a deduction of 2% per day beginning on the Monday. If assignments have been returned, this request will not be considered and a grade of 0 will be assigned.

You are encouraged to communicate with your peers to discuss the content of the assignments however, your submitted assignments must be your own work. Failure to do so, may constitute a Scholastic Offence.

**Weekly Quizzes** will be completed online. Quizzes will cover the material presented that week in the lectures and the lab videos. You will receive access to quizzes on Owl and you will have 1 attempt and 30 minutes to complete each quiz of 10 questions. You cannot revisit any of the questions. **The quizzes are released at 1130am on Thursdays and must be completed by Friday at 900am.** You are expected to complete these quizzes on an individual basis. There are no make ups for the quizzes. The lowest quiz mark will be dropped for everyone in lieu of make up quizzes.

- Weekly lab assignments are due at 11:55pm EST unless otherwise specified
- Students are responsible for ensuring that the correct file version is uploaded; incorrect submissions including corrupt files could be subject to late penalties (see below) or a 0
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days
- Any grade appeals on assignments, quizzes, or midterms must be received within 3 weeks of the grade being posted.
- 15% of your course grade will be evaluated and returned 3 days prior to the drop deadline (statement in policies below).

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

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

#### Information about late or missed evaluations:

- Late lab assignments without accommodation will be subject to a late penalty 2%/day beginning on the Monday after the due date.
- An lab assignment cannot be submitted after it has been returned to the class. Those with approved absences will have the weight of the assignment transferred to the other lab assignments
- One make-up test will be offered [Midterm Oct 27 530-730pm; Midterm Lab: Oct 28, 830am] Any students with a direct conflict will have consideration for an alternate time. Anyone who has an approved absence for the **make-up** assessments will be offered a make up time in May 2023.
- There is no reweighting for Exams or Lab assessments. These components must be completed. Anyone who has not completed these, will be offered a make up date on May 3, 2023. An INC or SPC will appear on the transcript until these components have been completed.

**INC (Incomplete Standing):** If a student has been approved by the Academic Counselling Office (in consultation with the instructor/department) to complete term work at a later date, an INC will be assigned. Students with INC will have their course load in subsequent terms reduced to allow them to complete outstanding course work. Students may request permission from Academic Counselling to carry a full course load for the term the incomplete course work is scheduled.

**SPC (Special examination):** If a student has been approved by the Academic Counselling Office to write a Special Examination and the final exam is the only outstanding course component, an SPC will be assigned. If the class has a makeup exam, the student is expected to write the makeup exam. If the class doesn't have a makeup exam or the student misses the makeup exam for reasons approved by the Academic Counselling Office, the student will write the exam the next time the course is offered. Outstanding SPCs will reduce the course load for the term the exam is deferred as outlined in [Types of Examinations](#) policy.

## 9. Communication:



- Students should check the OWL site every 24–48 hours
- Students should email their instructor(s) and teaching assistant(s) using email
- Course admin or grading questions should be directed to the Course Coordinator only.
- Emails will be monitored daily; students will receive a response in 24–48 hours
- This course will use the Owl forum for questions/discussions
- Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses

## 10. Office Hours:



- Drop in Group Office hours will be held over Zoom (link found in Weekly content)
- Office hours will be held Thursdays at 4pm over Zoom
- Students who wish to have an individual meeting with Instructors are asked to arrange them on an as needed basis with the instructor.

## 11. Resources

- All resources will be posted in OWL
- Recommended textbook

*Human Anatomy*, Marieb, Mallatt and Wilheld; 9th edition (including a Brief Atlas of the Human body; 2nd Edition). Pearson/Cummins Pub. Co.2013. (ISBN-10: 0321822145 • ISBN-13: 9780321822147) (Previous editions also acceptable)

Any other anatomy text which covers neuroanatomy is also acceptable. Some suggestions:  
*Barr's The Human Nervous System: An Anatomical Viewpoint* by John Kiernan and Raj Rajakumar



*The Principles of Human Anatomy* by Tortora and Nielsen

Helpful websites:

[www.neuroanatomy.ca](http://www.neuroanatomy.ca)

[BlueLink - University of Michigan Medical School](#)

[3D4Medical Complete Anatomy](#) (subscription required\*\*\* note Instructor comments in intro lecture)

Also suggested (at Taylor Library 2 hour Reserve):

*Color Atlas of Anatomy*, Rohen, Yokochi, Lütjen-Drecoll; 7<sup>th</sup> edition. Lippincott Williams & Wilkins 2011. (ISBN: 9781582558561).

*Atlas of Clinical Gross Anatomy*, Moses, Nava, Banks, Petersen; 2<sup>nd</sup> edition. Elsevier Ltd. 2013. (ISBN: 978-0-323-07779-8).

*Human Anatomy: Color atlas and text*. 2008, 5th edition. Gosling et al., Mosby-Wolfe, London (ISBN:9780723434511)

## 12. Professionalism & Privacy:



Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared (e.g., Must Knows Facebook group, Course Hero, Chegg, etc.)
- Recordings are not permitted (audio or video) without explicit permission

- Permitted recordings are not to be distributed
- 

**Laboratory videos have been created using human cadaveric material.** This course is privileged to be able to provide human cadaveric specimens for student learning. These specimens have been donated by individuals through Western's Body Bequeathal Program and hence, we expect the utmost of respect for them by our students. **Sharing or downloading of this material for use outside of this course is strictly prohibited.** Several resources have been suggested to allow students to review cadaveric specimen images outside of the lab.



Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's Non-Discrimination/Harassment Policy (M.A.P.P. 1.35) and Non-Discrimination/Harassment Policy – Administrative Procedures (M.A.P.P. 1.35).

Any **student**, staff, or faculty member who experiences or witnesses' behaviour that may be harassment or discrimination **must report the behaviour** to the Western's Human Rights Office. Harassment and discrimination can be human rights-based, which is also known as EDI-based, (sexism, racism, transphobia, homophobia, islamophobia, xenophobia, antisemitism, and ableism) or non-human rights-based (personal harassment or workplace harassment).

### 13. How to Be Successful in this Class:

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.

1. "Attend" the lectures on a regular schedule. It is not possible to view all of the lectures for the first time the week before the exam and expect success. Anatomy takes time to understand the relationships and functions of the structures. Give yourself lots of time to learn the material. If you find yourself more than 2 lectures "behind", use this as a wake-up call to get caught up. Binge watching is for Netflix, not Anatomy lectures!
2. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule your time throughout the course.
3. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
4. Follow weekly checklists created on OWL or create your own to help you stay on track.
5. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
6. Draw it! If you can draw the anatomy, you will have an easier time understanding it
7. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
8. Do not be afraid to ask questions! We have a knowledgeable, enthusiastic team assembled to help you succeed in this course. Take advantage of us! Post questions on the forum if you think others might have similar questions
9. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.
10. The Learning Development & Success Team at UWO ([www.learning.uwo.ca](http://www.learning.uwo.ca)) has many virtual services available to students and has prepared several documents to support online learning that might be of interest:

[Strategies for Successful Online Learning](#)

[Preparing for Online Exams](#)

[Maintaining Motivation Online](#)





## 14. Western Academic Policies and Statements

### Absence from Course Commitments

#### A. Absence for medical illness:

Students must familiarize themselves with the [Accommodation for Illness Policy](#).

A student seeking academic accommodation for any **work worth less than 10%** (Lab Assignments or Quizzes) must contact the instructor or follow the appropriate Department or course specific instructions provided on the course outline. Instructors will use good judgment and ensure fair treatment for all students when considering these requests. You are not required to disclose details about your situation to your instructor; documentation is not required in this situation, and you should not send any pictures to your instructor.

If you are unable to meet a course requirement for any **work worth 10% or greater** (Exams or Lab Exams) due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counseling as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. Please note that the format of a make-up test, exam, or assignment is at the discretion of the course coordinator.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found at: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)

#### B. Absence for non-medical reasons:

Student absences might also be approved for non-medical reasons such as religious holidays and compassionate situations. Please review the policy on [Accommodation for Religious Holidays](#). All non-medical requests must be processed by Academic Counselling. Not all absences will be approved; pay attention to the academic calendar and final exam period when booking any trips.

#### C. Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

### Academic Offenses

Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

### Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible

Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#)

### **Correspondence Statement**

The centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).

### **Discovery Credit Statement**

Students are permitted to designate up to 1.0 Discovery Credit course (or equivalent) for pass/fail grading that can be counted toward the overall course credits required for their degree program. The details of this policy and the deadlines can be found [here](#).

### **15% Rule**

According to the [Evaluation of Academic Performance](#) policy, at least three days prior to the deadline for withdrawal from a 1000- or 2000-level course without academic penalty, students will receive assessment of work accounting for at least 15% of their final grade. Generally, students can expect some form of feedback on their performance in a course before the drop date. In rare instances, at the Dean's discretion, an exemption can be issued, which also must be noted in the course syllabus. Deans should review exemptions on a course-by-course basis each time an exempted course is offered.

Although this rule is intended for 1000 and 2000 level courses, this course will adhere to this rule so that students have exam results returned prior to the drop date. This may not apply to students who require a make up exam.

## **15. BMSUE Academic Policies and Statements**

### **Cell Phone and Electronic Device Policy (for in-person tests and exams)**

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School that any electronic devices, i.e., cell phones, tablets, cameras, or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket. Any student found with one of these prohibited devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

### **Copyright and Audio/Video Recording Statement**

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

### **Rounding of Marks Statement**

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks **WILL NOT** be bumped to the next grade or

GPA, e.g., a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

## **16. Support Services**

The following links provide information about support services at Western University.

[Academic Counselling \(Science and Basic Medical Sciences\)](#)

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)

## **17. SSC Funding**

We are extremely grateful for the previous support of the Science Student Donation Fund in this course. If you are a BSc or BSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the chair of the department or email.