Schulich MEDICINE & DENTISTRY

Western Science

Bachelor of Medical Sciences (BMSc) Program

Anatomy and Cell Biology
3200B Human Neuroanatomy

Course outline for Summer 2024

THRIVE together

Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the Digital Student Experience website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: https://www.uwo.ca/health/.

1. Technical Requirements:

Stable internet connection

Laptop or computer

Working microphone (Suggested)

Working webcam

2. Course Overview and Important Dates:

Delivery Mode	Dates	Time
Online		

*Details about design and delivery of the course are listed below in Section 4

Classes Start	Classes End
June 17	July 26

* June 21, 2024: Last day to drop a second-term half course without penalty

3. Contact Information

Course Coordinator	Contact Information

Instructors	Contact Information

4. Course Description and Design

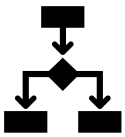
An introduction to the central nervous system (CNS). Topics include the basic structures and functional interconnections between subdivisions of the brain, spinal cord, and autonomic nervous systems; CNS development; structures that protect and support the brain; and clinical conditions associated with 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: 0.5 credit course; 4 lecture hours, 2 demonstration hours. 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.



Mode	Dates	Time	Frequency
Virtual asynchronous: Lec			Weekly
Virtual synchronous: Lab			Weekly
Virtual synchronous: Q&A			Weekly

☒ Automatic closed captioning will be provided through Panopto on video recordings.

All course material will be posted to OWL Brightspace: https://westernu.brightspace.com/d2l/home
Any changes will be indicated on the OWL Brightspace site and discussed with the class.

If students need assistance, they can seek support on the OWL Brightspace 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 functions 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 several CNS disorders.

6. Course Content and Schedule

Lectures
Monday, Tuesday, Thursday, and Friday 10:30-11:20 am; Lectures will either be pre-recorded or broadcast live using Panopto (if necessary). **Attendance during live times is not mandatory as all lectures are recorded and posted to Panopto for future use.**

Laboratory Demonstrations
Synchronous laboratories are held online. Students are expected to familiarize themselves with the lab outlines prior to viewing the associated lab videos. Material covered in the lab outlines may be tested on the lab assessments. Teaching Assistants will prepare summary material based on the lab outlines and lab videos.

Laboratory Zoom
Live, synchronous small group sessions will be hosted by the Teaching Assistants every Monday and Wednesday using Zoom. These sessions will include learning activities, sample cases, as well as time for Q&A. These sessions are tentatively set for 1 hr. timeslots at 10:30am, 12:30pm or 6:30pm. Students can select the time slot that best fits their schedule for the term. A summary of these sessions will be recorded for students who are unable to attend the live sessions.

Weekly Q&A
A live Q&A session with the Instructor(s) will be held via Zoom each Thursday at 11:00 am ET. A meeting invite will be provided on Brightspace. These are "drop-in" sessions intended as Q&A about course content or administration. They are not mandatory or recorded.

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 that students show the utmost respect for them.

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. See section **11. Resources.**

Laboratory Demonstrations

Term 1		
Lab 1		Terminology and Intro to the Brain
Lab 2		Histology
Lab 3		Skull and Meninges
		Canada Day – No Lab
Lab 4		Cerebral Hemispheres and Blood Supply
Lab 5		Basal Ganglia and Diencephalon
Lab 6		Brainstem and Cerebellum
Lab 7		Spinal Cord
Lab 8		Limbic System, Higher Functions, and ANS
Lab 9		Taste, Olfaction, and Vision
Lab 10		Hearing, Language, and Equilibrium

Lectures

Dates	Term 1 Topics	Lecturer
	L1 Embryonic Development of the Germ Layers	Barbeau
	L2 Development of the CNS	Barbeau
	L3 Histology of the CNS	Barbeau
	L4 Introduction to the CNS	Barbeau
	L5 Osteology of the Skull	Barbeau
	L6 Meninges and Ventricles	Barbeau
	L7 CNS Blood Supply	Barbeau
	L8 Cerebral Hemispheres	Barbeau
	L9 Basal Ganglia	Wood
	L10 Diencephalon	Wood
	L11 Brain Stem and Cranial Nerves	Wood
	L12 Brain Stem and Cerebellum	Wood
End of Term 1		
Midterm Exam		
Dates	**Term 2 Topics**	**Lecturer**
	L13 Spinal Cord	Wood
	L14 Ascending Sensory Pathways	Wood
	L15 Descending Motor Pathways	Wood
	L16 Higher Functions and Limbic System	Wood
	L17 Autonomic Nervous System and Homeostasis	Wood
	L18 Olfaction and Taste	Wood
	L19 Vision	Wood
	L20 Hearing and Language	Wood
	L21 Vestibular System	Wood
	L22 Neurological Disorders of the CNS	Mitchell
	L23 Neuropsychiatric Disorders of the CNS	Mitchell
End of Term 2		
FINAL EXAM		

7. Online Participation and Engagement

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

☒ Students are encouraged to participate during live sessions

☒ Students may also participate by interacting in the forums with their peers and Instructors on OWL Brightspace.

8. Evaluation

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

Component	Weight	Date
Term 1 Exam	25%	
Term 2 Exam	25%	
Lab Assessments (2)	20%	With Term Exams
Research Project	15%	
Lab Assignments (10)	10%	Bi-Weekly
Quizzes (6)	5%	Weekly

☒ All assignments and quizzes are due at 11:55 pm EST unless otherwise specified

☒ After an assessment is returned, students are asked to wait 24 hours to digest feedback before contacting their evaluator. To ensure a timely response, reach out within 7 days.

Term Exams: Term 1 and 2 exams will be multiple choice questions. These will be completed in-person at Western University. If you are unable to write the scheduled exam, please see Section 14 for the policy and procedures for "Absence from Course Commitments" and "Special Examinations".

The **Lab Assessment** will be in a "bell-ringer" format. These will be given in person with a time of approximately 1 min per question. The date for these assessments will be the same as the term exam dates above (Term 1: June 1, Term 2: June 22). More details will be released at the start of classes.

Lab Assignments will be completed for each lab session and **submitted by 11:55 pm (ET) on the Tues (for Monday labs) or Thurs (for Wed labs) following each lab**. There are no make-up assignments; instead, you will be granted an extension for TWO of the 10 submissions. Any extensions required beyond the two allowed will be deducted 50% per day. 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 in the lectures and the lab videos for that week. You will receive access to quizzes on OWL Brightspace, where you will have 1 attempt for each quiz to complete 20 questions. You cannot revisit any of the questions once you move to the next one. The quizzes are **released at 9:00am on Fridays and must be completed by 11:55pm ET on the following Monday.** You are expected to complete these quizzes on an **individual** basis. There are no make-ups for the quizzes. **The lowest mark will be dropped for everyone in place of make-up quizzes.** It is not necessary to report an absence for a quiz.

Anatomy Research Project: Students will select a topic from a list of suggestions, or students can request to study an alternative topic **with the Course Coordinator's approval.** These topics include diseases/disorders with strong anatomical basis. Students will prepare a short presentation, record it on Zoom, and submit it online. These presentations will be evaluated by the Teaching Assistants as well as 5 of your classmate peers. Further details on the assignment will be provided separately. You must submit your presentation on time, failure to do so may not allow for peer evaluation. The final presentation grade will be a combination of TA grade (50%), peer grade (40%), and the completion of peer grading (10%). If you are unable to submit the assignment by the specified deadline, please see Section 14 for the policy and procedures for "Absence from Course Commitments".

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.

A+	90–100%	One could scarcely expect better from a student at this level
A	80–89%	Superior work which 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

Information about late or missed evaluations:

☒ Late assessments without illness self-reports will be subject to a late penalty 2%/day.

☒ A make-up exam will be offered typically 1 week following the originally scheduled exam. Reweighting of assessments is not possible.

☒ If a make-up exam is missed, the student will receive an SPC and complete the exam the next time the course is offered (Winter 2025).

9. Communication:

☒ Students should check the OWL Brightspace site every 24 – 48 hours.

☒ A weekly update will be provided on the OWL Brightspace announcements.

☒ Course administration questions should be directed to the Course Coordinator only.

☒ Course content questions should be posted on the Discussion forum on OWL Brightspace.

☒ Emails will be monitored on weekdays; students will receive a response in 24 – 48 hours.

☒ The Discussion forums will be monitored daily by Instructors and/or Teaching Assistants

10. Office Hours:

☒ Group office hours will be held remotely using Zoom on Thursday's at 11:00am ET.

☒ Students who would like a one-on-one Zoom meeting can email for an appointment.

☒ Term 1 exam review will be offered on an individual basis over Zoom.

11. Resources

☒ All resources will be posted in OWL Brightspace

☒ 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

Neuroanatomy through Clinical Cases, Blumenfeld; 3rd Edition*The Principles of Human Anatomy by* Tortora and Nielsen

Helpful websites:

www.neuroanatomy.ca
www.slides.uwo.ca
Anatomy TV
Blue Link – University of Michigan Medical School
3D4Medical Complete Anatomy (subscription required)

☒ Also suggested (at Taylor Library 2-hour Reserve):

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

Atlas of Clinical Gross Anatomy, Moses, Nava, Banks, Petersen; 2nd 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:

☒ Students are expected to follow online etiquette expectations provided on OWL Brightspace.

☒ All course materials created by the instructor(s) are copyrighted and cannot be sold/shared.

☒ Recordings are not permitted (audio or video) without explicit permission.

☒ Permitted recordings are not to be distributed.

☒ Students will be expected to take an academic integrity pledge before some assessments.

☒ All recorded sessions will remain within the course site or unlisted if streamed.

☒ **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 that students show the utmost respect for them. **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.

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 two lectures "behind", use this as a wake-up call to get caught up. Binge-watching is for Netflix, not anatomy lectures!
2. Follow weekly checklists created on OWL Brightspace or create your own to help you stay on track.
3. Take notes as you go through the lesson material. Treat this course as you would a face-to-face course. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
4. Read the textbook. After watching the lecture, you should follow up with textbook readings.
5. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support – "teach" each other to help you understand the material better yourself. You will find it very helpful for your own learning if you can explain something to another person.
6. Draw it! If you can draw the anatomy, you will have an easier time understanding it.
7. 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 Discussion forum if you think others might have similar questions.
8. The Learning Development & Success Team at UWO (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 (within 24 hours).** 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

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.

Turnitin and other similarity review software

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. Students will be able to view their results before the final submission. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and Turnitin.com.

15. BMSUE Academic Policies and Statements

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.

SSC Funding

This course is supported by the Science Student Donation Fund. If you are a BSc or BMSc 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 the Science Students' Council at ssc@uwo.ca.

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