Course number: ANATCELL 9569B
Course title: Clinical Neuroanatomy
Course Coordinator/Instructor:

Dr. Raj Rajakumar
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Dr. Walter Rushlow (course coordinator)
Office: MSB 454, Medical Sciences Building
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Email: wrushlow@uwo.ca

Suggested Prerequisite: Neuroscience2000, ACB3319 or equivalent.

Enrolment: Clinical Anatomy MSc/PhD graduate students. Special permission requests will be considered for students enrolled in the ACB or Neuroscience graduate programs. Enrollment limit is 15 students, auditing of the course will not be permitted.

Course description: The purpose of ACB9569B is to provide a general introduction to the structure and function of the human nervous system. Lectures will provide an overview of the anatomy, interconnections and function(s) of specific regions/structures of the human nervous system. The laboratories offer a hands-on opportunity to identify the major landmarks of the brain and better understand the three dimensional architecture of the brain and spinal cord. Collectively, the lectures and laboratories will provide the anatomical and functional foundation necessary to understand disorders of the nervous system. A variety of disorders affecting the nervous system, such as stroke, schizophrenia, cancer, Parkinson’s disease and Huntington’s disease, will be discussed in terms of clinical signs/prognosis and cause/pathology. In addition, clinical issues will be examined through the use of case studies. Each student will be assigned a case study to independently investigate and present to the class using basic and clinical primary research sources. There will also be a clinical guest speaker that is an expert in one or more disorders of the nervous system. The guest speaker will provide an opportunity for the students to see how the anatomy they learn in class translates to clinical practice. Finally, students will work collectively in small groups to generate a Wikipedia style entry on a neuroanatomical topic of interest.

Time and Location:
Thursdays 11:30am-3:30pm, MSB447.
One ~2-hour lecture/week
One ~2-hour laboratories or learning module/week
Books and Notes:
There are a variety of good neuroanatomy texts, atlases and dissectionaries available and most are suitable for the course. However, the course instructors will use the following as guides for the course:


PowerPoint Lectures/Case Studies will be available from the instructors on the OWL website (https://owl.uwo.ca/portal).

Specimens (models, plastinated brains, cross-sections and fixed brain specimens for dissection) are available in the gross anatomy laboratory (M483), anatomy museum (D4002) and from Tom Chrones in the department. Virtual 3D brain images are available at http://360anatomy.uwo.ca/.

Course Evaluation:
Theory Quizzes¹ Jan. 26th, Feb. 16th, Mar. 30th, Apr. 13th 8%
Laboratory Quiz² Feb. 9th 2%
Wikipedia³
  Select Topic Feb. 16th 2%
  Draft Wiki Mar. 16th 8%
  Final Wiki Apr. 6th 5%
Mid-term Exam⁴ Mar. 2nd 20%
Viva Laboratory Exam⁵ Mar. 9th 15%
Case Study Presentation⁶ Mar. 23rd – Apr 13th 20%
Final Exam⁷ Apr. 27th 20%

¹Theory quizzes will be based on the lecture material and provide students with an opportunity to assess their progress in the course prior to writing the exams. The quizzes will also provide an example of the type of question to expect on the exams. Students that have difficulty with the quizzes (theory or laboratory) are strongly encouraged to seek assistance from the course instructors to resolve any difficulties prior to completing the exams.

²The laboratory quiz will be a short verbal assessment of student’s progress in Laboratories 1-3 and provide a primer on how the Laboratory Exam will be administered.

³The Wikipedia will be completed as a group exercise with 3-5 students/group. By consensus, the group will decide on a neuroanatomical structure/feature/phenomena of interest that does not have a robust online entry and create a detailed Wiki style document (including references and original diagrams if applicable) using the best information currently available in the scientific
The Wikipedia exercise will be completed in three steps and each part must be submitted by **5pm on the due date** to be evaluated. Step one, the groups will select their topic and have it approved by the course instructors. Step two, the groups will prepare a draft Wiki and submit it to the course instructors for feedback. Finally, students will submit their finalized Wiki’s for evaluation.

4 Mid-Term and Final Exams will be short answer. The final exam is non-cumulative.

5 The viva laboratory exam will be a 15 minute question and answer session administered by the course instructors using plastinated brains, models, slides etc.

6 A case study will be provided to each student enrolled in the course. The student is responsible for researching the case and delivering a presentation (20 minutes) that includes an overview of the case, the region(s) of the brain affected and the possible cause(s) for the symptoms presented. There will be an opportunity for questions and discussions at the end of each case study.

**Statement on Use of Electronic Devices:**
The use of electronic devices such as laptops and tablets are permitted except during quizzes and exams. However, electronic devices are permitted as learning aids, not to surf the net, Tweet, Facebook, watch YouTube videos or engage in other distractions during lectures. Recording (audio/video) of the lectures or laboratories and/or distribution of the lecture/laboratory materials is not permitted without the express written consent of the course coordinator.

**Evaluation of Student Performance:**
The minimum grade needed to pass the course is dependent upon the program requirements of the student’s graduate program.

In May, 2008, The University of Western Ontario's Senate approved a new medical note policy, which affects all students. The following is an outline of that policy. For more detailed information and forms, please visit [https://studentservices.uwo.ca/secure/index.cfm](https://studentservices.uwo.ca/secure/index.cfm), and for further policy information please visit [http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf](http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf)

Documentation from Family Physicians and Walk-In Clinics: A *Western Student Medical Certificate (SMC)* is required where a student is seeking academic accommodation. This documentation should be obtained at the time of the initial consultation with the physician or walk-in clinic. An SMC* can be downloaded under the Medical Documentation heading of the following website: [https://studentservices.uwo.ca/secure/index.cfm](https://studentservices.uwo.ca/secure/index.cfm). Hard copies are available from the student’s home Faculty Academic Counseling Service.

Documentation from Student Health Services: Students obtaining documentation from Student Health Services should sign a “release of information.” This form authorizes Student Health Services to provide information to the student’s home Faculty. Release of information forms are available from, and can be arranged through, the student’s home Faculty Academic Counseling Service.
Documentation from Hospital Urgent Care Centre or Emergency Departments: Students should request that an SMC* be filled out. Students may bring this form with them, or request alternative Emergency Department documentation. Documentation should be secured at the time of the initial visit to the Emergency Department. Where it is not possible for a student to have an SMC* completed by the attending physician, the student must request documentation sufficient to demonstrate that his/her ability to meet his/her academic responsibilities was seriously affected.

*To print or see an example of the Western Student Medical Certificate (SMC) please visit https://studentservices.uwo.ca/secure/index.cfm and click on ‘Student Medical Certificate.pdf’.

**Plagiarism:**
Students must write their essays, tests, assignments, and quizzes independently. In the group setting, as described above, you are expected to participate otherwise you are committing plagiarism by allowing your name to appear on the work turned in. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the current Academic Calendar). Plagiarism Checking: *The University of Western Ontario uses software for plagiarism checking.* Students may be required to submit their written work in electronic form for plagiarism checking.

**Statement of Academic Offences:**
Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf.
**Course Outline:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture</th>
<th>Topic</th>
<th>Quiz/Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 12&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 1</td>
<td>Meet the Instructors – Course Overview/Information Blood Supply, Meninges and CSF</td>
<td>RR/WR</td>
</tr>
<tr>
<td>Jan. 19&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 2</td>
<td>Spinal Cord Blood Supply and Meninges</td>
<td>RR/WR</td>
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<tr>
<td>Jan. 26&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 3</td>
<td>Brainstem and Cranial Nerves Spinal Cord and Cranial Nerves Quiz 1 (Lecture 1 and 2)</td>
<td>WR/RR</td>
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<tr>
<td>Feb. 2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>Lecture 4</td>
<td>Brainstem Reticular Formation and Diencephalon Brain stem and Diencephalon</td>
<td>WR/RR</td>
</tr>
<tr>
<td>Feb. 9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 5</td>
<td>Cerebral Cortex Cerebral cortex and White Matter Laboratory Quiz (Laboratory 1-3)</td>
<td>RR/WR</td>
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<tr>
<td>Feb. 16&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 6</td>
<td>Corpus Striatum White Matter and Basal Ganglia Quiz 2 (Lecture 3 and 4)</td>
<td>RR/WR</td>
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<tr>
<td>Feb. 23&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>Lecture 7</td>
<td>Cerebellum, White Matter and Ventricles Cerebellum and Ventricular System</td>
<td>WR/RR</td>
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<tr>
<td>Mar. 2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>Learning Module 1</td>
<td>Mid-Term Exam (11:30am – 1:30pm) Case Study Presentation Demonstration</td>
<td>RR/WR</td>
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<tr>
<td>Mar. 9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Viva Laboratory Exam</td>
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<tr>
<td>Mar. 16&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 8</td>
<td>Limbic System Guest Speaker</td>
<td>RR/WR</td>
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<tr>
<td>Mar. 23&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>Lecture 9</td>
<td>General Sensory Systems Case Presentations</td>
<td>WR/RR</td>
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<tr>
<td>Mar. 30&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 10</td>
<td>Special Sensory Systems Case Presentations Quiz 3 (Lecture 8 and 9)</td>
<td>RR/WR</td>
</tr>
<tr>
<td>Apr. 6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 11</td>
<td>Motor System Case Presentations</td>
<td>WR/RR</td>
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<tr>
<td>Apr. 13&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Lecture 12</td>
<td>Autonomic Nervous System and Visceral Innervation Case Presentations (if needed) Quiz 4 (Case Study based on Lectures 9-11)</td>
<td>WR/RR</td>
</tr>
<tr>
<td>Apr. 27&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Final Exam (12:30-3:30pm)</td>
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<td>RR/WR</td>
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RR: Raj Rajakumar; WR: Walter Rushlow

**NOTE:** Given the demanding clinical schedules of the guest speaker(s), it may be necessary to schedule their visit outside normal class hours. Materials covered by the guest speaker are not examined.