1. Course Information

Physiology 4710A: Physiology of the Senses
Fall Term 2017

This course covers the physiology of the senses in the primate, including touch, taste, pain, smell, vision, motion and hearing. Each sensory modality is used to exemplify a particular aspect of sensory processing from stimulus encoding at the periphery to the feature extraction in the sensory cerebral cortex.

Lectures:

Interdisciplinary Research Building, room 1170  Thursday 12:30-2:20 PM
Also offered online through Distance Studies as 650 Physiology of the Senses

Laboratories and/or Tutorials:

Tutorials Natural Sciences Centre, Rm 7, Tuesdays or Wednesdays, 4:30 to 5:30

Requisites:
Prerequisite(s): Physiology 3120 or Neuroscience 2000 or Physiology3140A

Senate regulation 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.

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 Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

2. Instructor Information

<table>
<thead>
<tr>
<th>Instructors</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Office Hours</th>
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<tbody>
<tr>
<td>Tutis Vilis -Course Manager)</td>
<td><a href="mailto:me@tutis.ca">me@tutis.ca</a>.</td>
<td>Brain and Mind Institues, room 3180</td>
<td>83830</td>
<td>3:30 to 5 Thursdays</td>
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OWL:
Students with OWL issues should see: https://owl.uwo.ca/portal/site/owldocs
3. Course Syllabus

This course provides students with an introduction to the function of the many stages used by the nervous system to process our sensory inputs; its sensory physiology including that of touch, taste, pain, smell, vision, motion and hearing. The focus is on a concise and lucid description for how the various brain regions function and interact. Each sensory modality is used to exemplify a particular aspect of sensory processing from how stimuli are encoding at the periphery to the feature extraction processes of the sensory cerebral cortex.

The first half of the course deals with vision from its detection in the eye to the function of the cerebral cortex in the recognition of objects including faces and the cortical role in directing one’s actions to these objects. This emphasis on vision stems from the fact that more is known about vision than the other senses and because the mechanisms adopted by the visual system are mirrored and adopted by the other senses.

By the end of the course, successful students will be able to identify the pathways used by each of the senses for perception.

By the end of the course, successful students will be able to explain the mechanisms used by each of the senses for transduction.

Topics covered are

Session 1       The Eye
Session 2       Primary Visual Cortex
Session 3       Visual Perception of Objects
Session 4       Visual Perception of Motion
Session 5       Association Cortex
Session 6       Streams for Visually Guided Action
Session 7       Touch, Pain, Taste and Smell
Session 8       Muscle Sense
Session 9       Hearing
Session 10      Balance
Session 11      Eye Movements
Session 12      Memory

2. Each session consists of

- **Lectures are 12:30 to 2:30 pm every Thursday.** These present new material which forms the basic conceptual building blocks of each topic.

- Each week a **series of problems** are **assigned** based on the material covered. These problems allow you to review and extend the basic conceptual building blocks. It is very important that you use these problems to perfect your problem-solving skills. **Students that have done poorly** in previous years have admitted that they mindlessly click the mouse to find the correct answers and then memorize them. I promise you that you **will need your problem-solving skills** in the midterm and a final exam. Your memory will be of little help. In the problems you will learn that
  - **there is more than one right answer**
• but some right answers are better than others
• which is better can vary depending on circumstances
• The question of why manhole covers are typically round was made famous by Microsoft and is a good example problem-solving.
• see video of Dan Pink on the surprising science of motivation and why studying for marks might not be the right strategy.
  • You can go over your solutions during a problem solving tutorial with your tutor, on Tuesdays or Wednesdays Natural Sciences Centre, Rm 7, 4:30 to 5:30. But try all the problems on your own first before coming to the tutorials. Make sure that you understand the reasons for why one answer was more correct and the others less correct or wrong.
• A weekly OWL Quiz consisting of 3 to 5 multiple choice questions which must be completed in 15 min any time between 5:30pm to midnight every Wednesday.

4. Course Materials
All the course materials are posted on this web site.
This material consists of:
  1. The animated Flash presentation of each session (without voice),
  2. Videos of previous week’s lectures, posted the day after the lecture,
  3. A PDF file that can be used to obtain a printed version of each session. An updated version of the PDF is posted on the night before the lecture.
  4. Practice problems and answers as well as related experiments,
  5. Links to other interesting related Web site.

The testable material is all that is in the PDF’s and the Practice problems. Links material is FYI and not testable.

5. Evaluation:
The evaluation consists of:
Final examination, 50% - 3 hrs., about 60 multiple choice questions.
Mid term test, 30% - 1.5 hrs., about 30 multiple choice questions. The midterm covers lectures 1 through 6.
Weekly OWL Quiz 20% - multiple choice questions.

Policy on Rounding and Bumping of Grades
Across the Basic Medical Sciences Undergraduate Education programs and within the department of Physiology and Pharmacology 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 in 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.

**Policy on Plagiarism**
The Department of Physiology and Pharmacology strongly condemns plagiarism. Plagiarism is the “act or instance of copying or stealing another’s words or ideas and attributing them as ones own.” (Excerpted from Black’s Law Dictionary, West Group, 1999, 7th ed. Pg 1170 and the definition used by Western’s Scholastic Discipline document). Plagiarism can be intentional or unintentional and regardless of intent, is a scholastic offence. It should be noted that self-plagiarism, plagiarizing ones own words for multiple assignments is subjected to the same penalty as plagiarizing another. Courses in Physiology and Pharmacology use turnitin, a similarity checking software embedded within OWL. We encourage all students to run their assignments through turnitin prior to submitting their reports for grading. Any report flagged as yellow (25-49% matching text), orange (50-74% matching text) or red 75-100% matching text) will be considered plagiarism (pending investigation by the instructor). It should be noted that a document could be plagiarized yet still pass the similarity check on turnitin. The minimum penalty for a first time plagiarism offence of any kind is a grade of zero on the assignment. In addition, details of the offence will be forwarded to Dean’s office and stored. A second offence will carry a much stricter penalty in line with Western’s Scholastic Discipline policies [https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

**Cell Phone and Device Policy**

The Department of Physiology and Pharmacology is committed to ensuring that testing and evaluation are undertaken fairly. For all tests and exams, it is the policy of the Department of Physiology and Pharmacology that any devices with a battery (e.g. cell phone, tablet, camera, watch, smart watch, ipod) are strictly prohibited. These devices MUST be left either at home or with the students bag/jacket at the front of the room and MUST not be at the test/exam desk or in the individuals 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 Department of Physiology and Pharmacology is not responsible for stolen/lost or broken devices.
The Department of Physiology and Pharmacology follows the Western University student academic appeals policy
(http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1
&SelectedCalendar=Live&ArchiveID=#SubHeading_181).

All appeals to individual graded course components must be submitted to the course instructor within 3 weeks of the grade being released. All final course grade appeals must be received by January 31 (1st term classes) or June 30 (2nd term half classes and full year classes). You must first appeal to the course manager. If this appeal is rejected, then you can appeal to the Undergraduate Chair of the Department of Physiology and Pharmacology (Brad.Urquhart@schulich.uwo.ca). If this appeal is rejected, you may then appeal to the Assistant Dean of the Bachelor of Medical Sciences Undergraduate Education Committee (Candace.Gibson@schulich.uwo.ca).

You must have suitable grounds for appeal which may include: 1) appeal on medical or compassionate grounds; 2) appeal based on extenuating circumstances beyond your control; 3) appeal based on bias, inaccuracy or unfairness. All appeals must be accompanied by a detailed explanation along with supporting documentation. You should submit your appeal as an e-mail with a single attachment. If you have multiple supporting documents, you should merge them into a single document.

6. Additional Information/Statements

Statement on Use of Electronic Devices

No cell phones or smart watches will be allowed during examinations.

Statement on 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 website: http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf.”
Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

**Absence from course commitments**

Information about “Accommodation for Medical Illness – Undergraduates: POLICY ON ACCOMMODATION FOR MEDICAL ILLNESS UNDERGRADUATE STUDENTS” can be found in the Academic Handbook at

http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf

**A. Absence for medical illness:**

Students must familiarize themselves with the Policy on Accommodation for Medical Illness for Undergraduate Students, located at:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf

The policy is also accessible from the Medical Accommodation Policy link at

https://studentservices.uwo.ca/secure/index.cfm

**Statement from the Academic Counselling Office, Faculty of Science (for Science and BMSc students)**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counselling Office 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 by the Academic Counselling Office and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Academic Counselling Office immediately. For further information please see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf

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:

https://studentservices.uwo.ca/secure/index.cfm

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

Students who 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.

**C. Special Examinations**

A Special Examination is any examination other than the regular final examination, and it may be offered only with the permission of the Dean/Academic Counselling Office 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. A Special Examination must be written at the University or an Affiliated University College no later than 30 days after the end of the examination period involved. To accommodate unusual circumstances, a date later than this may be arranged at the time permission is first given by the Dean/Academic Counselling Office of the Faculty. The Dean/Academic Counselling Office will consult with the instructor and Department Chair and, if a later date is arranged, will communicate this to the Office of the Registrar.

If a student fails to write a scheduled Special Examination, permission to write another Special Examination will be granted only with permission of the Dean/Academic Counselling Office in exceptional circumstances and with appropriate supporting documents. In such a case, the date of this Special Examination normally will be the scheduled date for the final exam the next time the course is offered. When a grade of Special (SPC) or Incomplete (INC) appears on a student's record, the notations will be removed and replaced by a substantive grade as soon as the grade is available.

**Support Services:**

Registrarial Services: [http://www.registrar.uwo.ca](http://www.registrar.uwo.ca)

Academic Counselling (Science and Basic Medical Sciences): [http://www.uwo.ca/sci/undergrad/academic_counselling/index.html](http://www.uwo.ca/sci/undergrad/academic_counselling/index.html)

USC Student Support Services: [http://westernusc.ca/services/](http://westernusc.ca/services/)

Student Development Services: [http://www.sdc.uwo.ca](http://www.sdc.uwo.ca)

Student Health Services: [http://www.shs.uwo.ca/](http://www.shs.uwo.ca/)

Students who are in emotional/mental distress should refer to Mental Health@Western [http://www.uwo.ca/uwocom/mentalhealth/](http://www.uwo.ca/uwocom/mentalhealth/) for a complete list of options about how to obtain help.