COURSE OUTLINE

1. **Course:** NEUR 401, Adv Neuroscience Laboratory - Winter 2019
   
   Lab 01: MW 11:00 - 13:50 in BI 196
   
   **Instructor**
   
   Corey Flynn  
   
   **Email**
   
   cflynn@ucalgary.ca
   
   **Phone**
   
   403 220-5055
   
   **Office**
   
   BI 448
   
   **Hours**
   
   By Appointment Only

   Lab 02: MW 14:00 - 16:50 in BI 196
   
   **Instructor**
   
   Corey Flynn  
   
   **Email**
   
   cflynn@ucalgary.ca
   
   **Phone**
   
   403 220-5055
   
   **Office**
   
   BI 448
   
   **Hours**
   
   By Appointment Only
   
   **Course Site:**

   D2L: NEUR 401 (Winter 2019)-Adv Neuroscience Laboratory

   **Note:** Students must use their U of C account for all course correspondence.

   **Course Outcomes:**

   - Identify brain structures and discuss their relative location and communication to each other.
   - Demonstrate proficiency in critical evaluation of published literature, as well as integration and summarization of diverse scientific reports.
   - Demonstrate technical laboratory skills.
   - Demonstrate their understanding of complex laboratory techniques, and extrapolate their understanding to solve higher order questions.
   - Demonstrate their understanding of underlying electrophysiological processes by applying it to practical laboratory exercises.
   - Integrate theoretical data and technical expertise.

2. **Requisites:**

   See section 3.5.C in the Faculty of Science section of the online Calendar.

   **Prerequisite(s):**

   Zoology 461 and admission to the Neuroscience program.

3. **Grading:**

   The University policy on grading and related matters is described in F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

<table>
<thead>
<tr>
<th>Component(s)</th>
<th>Weighting %</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep Brain Anatomy Exam</td>
<td>10%</td>
<td>January 23rd</td>
</tr>
<tr>
<td>Literature Review</td>
<td>15%</td>
<td>February 6th at beginning of class</td>
</tr>
<tr>
<td>Lab #1 Report</td>
<td>15%</td>
<td>February 25th at the beginning of class</td>
</tr>
<tr>
<td>Lab #2 Report</td>
<td>15%</td>
<td>March 13th at the beginning of class</td>
</tr>
<tr>
<td>Lab Concepts and Techniques Exam</td>
<td>15%</td>
<td>March 27th</td>
</tr>
<tr>
<td>Final Lab Report</td>
<td>30%</td>
<td>April 12th at 12:00pm in box outside BI 196</td>
</tr>
</tbody>
</table>

   Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the
student will be assigned a grade. The student’s grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

<table>
<thead>
<tr>
<th>Minimum % Required</th>
<th>A+</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>92 %</td>
<td>88 %</td>
<td>84 %</td>
<td>80%</td>
<td>76%</td>
<td>72 %</td>
<td>68 %</td>
<td>64%</td>
<td>60%</td>
<td>56 %</td>
<td>50 %</td>
</tr>
</tbody>
</table>

4. Missed Components Of Term Work:

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see Section N.1; for more information regarding the use of statuary declaration/medical notes, see FAQ). Absences must be reported within 48 hrs.

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student’s responsibility to familiarize themselves with these regulations. See also Section E.3 of the University Calendar.

Any absences from the lab must be communicated with the Instructor (cflynn@ucalgary.ca).

5. Scheduled Out-of-Class Activities:

There are no scheduled out of class activities for this course.

6. Course Materials:

Required Textbook(s):


Students will need to bring their own lab materials. These include a lab coat, note book, and a dissection kit. The dissection kit can be the same one that you used in other courses. If you are unable to acquire a dissection kit, please contact the course instructor.

7. Examination Policy:

Details of each evaluation component will be discussed during the lab.

Late submission of assignments will receive a penalty of 10% per day until submitted. If an assignment is not submitted by 5 days following the due date, it will not be accepted.

Students should also read the Calendar, Section G, on Examinations.

8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student’s writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section E.2 of the University Calendar.
10. **Human & Living Organism Studies Statements:**

Students will not participate as subjects or researchers in human studies.

See also Section E.5 of the University Calendar.

**STUDIES IN THE BSc NEUROSCIENCE PROGRAM MAY INVOLVE THE USE OF LIVING AND DEAD ORGANISMS.** Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The program strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered in the program should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with Section SC.4.1 of the University Calendar.

11. **Reappraisal Of Grades:**

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. **Non-academic grounds are not relevant for grade reappraisals.** Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See Section I.3 of the University Calendar.

   a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within 15 days of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections I.1 and I.2 of the University Calendar

   b. **Final Exam:** The student shall submit the request to Enrolment Services. See Section I.3 of the University Calendar.

12. **Other Important Information For Students:**

   a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, Mental Health Services Website) and the Campus Mental Health Strategy website (Mental Health).

   b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call 403-210-9355.

   c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at 403-220-2208.

   d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or
expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K, Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. These are only examples.

e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.

f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at procedure-for-accommodations-for-students-with-disabilities.pdf.

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Program Director of the Neuroscience Program, Dr. Willem Wildering by email wilderin@ucalgary.ca or phone 403 220-5283. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than 14 days prior to the date in question. See Section E.4 of the University Calendar.

g. **Safewalk:** Campus Security will escort individuals day or night (See the Campus Safewalk website). Call 403-220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see Legal Services website.

i. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: 403-220-3913 Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: suvpaca@ucalgary.ca.

j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.

k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction (USRI) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.

l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or non-academic misconduct, in addition to any other remedies available at law.

Lab Schedule

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Jan 14</th>
<th>Introductions / Sheep Brain Anatomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 16</td>
<td></td>
<td>Sheep Brain Anatomy</td>
</tr>
</tbody>
</table>
| Week 2 | Jan 21  
Oct 23 | Sheep Brain Anatomy  
**Sheep Brain Anatomy Quiz (Jan 23th)** |
|-------|---------|---------------------------------------------------|
| Week 3 | Jan 28  
Jan 30 | Introduction to Electrophysiology Rigs  
Microelectrode Preparation and handling |
| Week 4 | Feb 4  
Feb 6 | Oocyte lobe Harvesting  
**Literature Review Due (Feb 6th)**  
Proper oocyte perfusion and placement |
| Week 5 | Feb 11  
Feb 13 | Lab #1 – Recording of endogenous channels  
Lab #1 – Recording of endogenous channels |
| Week 6 | Feb 18  
Feb 20 | NO LABS (Reading Week) |
| Week 7 | Feb 25  
Feb 27 | **Lab #1 Report Due (Feb 25th)**  
Lab #2 – Recording of Ca+ induced Cl- currents  
Lab #2 – Recording of Ca+ induced Cl- currents |
| Week 8 | March 4  
March 6 | Lab #2 – Recording of Ca+ induced Cl- currents  
Plasmid Microinjection |
| Week 9 | March 11  
March 13 | **Lab #2 Report Due (Mar 13th)**  
Recording from Expressed oocytes  
Plasmid Microinjection |
| Week 10 | March 18  
March 20 | Recording from Expressed oocytes  
Plasmid Microinjection |
| Week 11 | March 25  
March 27 | Recording from Expressed Oocytes  
**Lab Concepts and Techniques Quiz (March 27th)** |
| Week 12 | April 1  
April 3 | Data Analysis  
Undergraduate Research Symposium |
| Week 13 | April 8  
April 10  
April 12 | Data Analysis  
Data Analysis  
**Final Lab Report Due (April 12th)** |

Department Approval:  
Electronically Approved  
Date: 2019-01-16 16:23

Associate Dean's Approval for out of regular class-time activity:  
Electronically Approved  
Date: 2019-01-16 23:02