

NEUR/PSYC 531		Nervous System Development		Fall 2018	
Instructor:	Richard Dyck	Lecture Location:	ST 027		
Phone:	403-220-4206	Lecture Days/Time:	TuTh/9:30-10:45am		
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Office Hours:	By appointment				

Course Description

The function of the human brain is mediated by billions of cells and trillions of connections. In order to understand human brain function we need to understand how these processes arise and the ways in which they change throughout a lifetime. The goal of this course is to provide a contemporary overview of CNS development from comparative, biological, behavioural and clinical perspectives.

Course Learning Outcomes

The Department of Psychology is committed to student knowledge and skill development. The table below lists the key learning outcomes for this course, the program-learning outcomes they facilitate (see psyc.ucalgary.ca/undergraduate/program-learning-outcomes), and the expected level of achievement.

Course Learning Outcomes	Assessment Methods	PLO(s)	Level(s)
Outline how the nervous system changes through a lifetime	Multiple choice, short- and long-answer written exams; oral presentations; research paper	1, 4, 5	C
Explain how evolutionary change can be effected through changes in development	Same as above	1, 2, 4, 5	C
Explain the mechanisms involved in cellular proliferation, differentiation and fate specification of neural cells	Same as above	1, 2, 4, 5	C
Explain the molecular, physiological and functional changes that occur in neuronal cells across the lifespan	Same as above	1, 2, 4, 5	A
Explain how synaptic connections are formed and modified during development	Same as above	1, 4, 5	C
Explain how interactions with the world continuously update and adapt the brain's functional architecture.	Same as above	1, 2, 4, 5	A

Outline the relationship between behavioural development and structural and physiological aspects of brain development	Same as above	1, 4, 5, 7	A
Explain how abnormalities in developmental mechanisms lead to brain disorders		1, 2, 4, 5, 7	A

Notes. PLOs = Program-Learning Outcomes: 1 = demonstrate knowledge of psychological sciences, 2 = think critically and solve problems, 3 = conduct research and analyze data, 4 = communicate effectively, 5 = demonstrate information literacy, 6 = understand and implement ethical principles, 7 = apply psychological knowledge and skills. Level of PLO achievement facilitated by this course: I = introductory, C = competency, A = advanced.

Prerequisites

NEUR/PSYC 475 – Drugs and Behaviour

Required Text

The required text for the course is: Breedlove, S. Marc (2017) Foundations of Neural Development, Sinauer Associates. The textbook can be purchased from the UCalgary Bookstore or online (eg. Amazon.ca). We will be covering a majority of the textbook. Additional reading materials may be drawn from a collection of sources, including classic journal articles in the field, more recent reports and review papers.

Evaluation

The final course grade will be based on:

- 1) Midterm 1 examination: 20%
 - a. 75 minutes in class on Oct 2
 - b. Multiple choice, short answer and Long answer/essay questions
 - c. Examines information in Chapters 1-3, all information covered in class, and any additional readings
- 2) Midterm 2 examination: 20%
 - a. 75 minutes in class on Oct 30
 - b. Multiple choice, short answer and Long answer/essay questions
 - c. Examines information in Chapters 4-6, all information covered in class, and any additional readings since the midterm 1 examination.
- 3) Final examination: 20%
 - a. 120 minutes – registrar scheduled
 - b. Multiple choice, short answer and Long answer/essay questions
 - c. Examines information in Chapters 7-10, information covered in class, and any additional readings since the midterm 2 examination.
- 4) In-Class Presentation: 20%
 - a. Topic must be directly related to one of the chapters covered, to date
 - b. Group presentation (maximum of 3 persons/group)
 - c. 20 minutes maximum, including time for questions
 - d. Grade is based on:
 - i. Content (12%)
 - ii. Presentation (6%)
 - iii. Participation (2%)

5) Term Paper: 20%

- a. On any topic dealing with normal or abnormal nervous system development.
- b. **Maximum** of 20 double-spaced pages, not including references or figures.
- c. 12 point Times font (about 15 characters/inch).
- d. The paper topic, in the form of an outline with annotated bibliography, must be approved by the instructor no later than **4:00 pm November 9th**.
 - i. **Reduction of final paper grade by 5% for each 24h interval (including weekends) that the paper outline is late.**
- e. The final paper will be graded on two criteria: **presentation (4%)**, including grammar, organization, clarity of writing, and other skills pertaining to written English, and **content (16%)**, including the accuracy of information presented, resources cited, etc.
- f. Paper to be handed in or e-mailed before **4:00pm December 10th, 2018**.
 - i. **Reduction of 1 letter grade for each 24h interval that the paper is late.**

Use of calculators, cell phones, ipads, iphones, computers, books, and notes are not permitted during tests.

Department of Psychology Criteria for Letter Grades

Psychology professors use the following criteria when assigning letter grades:

A+ grade: *Exceptional Performance.* An A+ grade indicates near perfect performance on multiple choice and short answer exams. For research papers/essays/course projects/presentations, an A+ grade is awarded for exceptional work deserving of special recognition and is therefore not a common grade.

A, A- Range: *Excellent Performance.* Superior understanding of course material. Written work is very strong in terms of critical and original thinking, content, organization, and the expression of ideas, and demonstrates student's thorough knowledge of subject matter.

B Range: *Good Performance.* Above average understanding of course material. Written work shows evidence of critical thinking and attention to organization and editing but could be improved in form and/or content.

C Range: *Satisfactory Performance.* Adequate understanding of course material. Knowledge of basic concepts and terminology is demonstrated. Written work is satisfactory and meets essential requirements but could be improved significantly in form and content. Note: All prerequisites for courses offered by the Faculty of Arts must be met with a minimum grade of C-.

D range: *Marginally meets standards.* Minimal understanding of subject matter. Written work is marginally acceptable and meets basic requirements but requires substantial improvements in form and content. Student has not mastered course material at a level sufficient for advancement into more senior courses in the same or related subjects.

F grade: *Course standards not met.* Inadequate understanding of subject matter. Written work does not meet basic requirements. Student has not demonstrated knowledge of course material at a level sufficient for course credit.

Grading Scale

A+	96-100%	B+	80-84%	C+	67-71%	D+	54-58%
A	90-95%	B	76-79%	C	63-66%	D	50-53%
A-	85-89%	B-	72-75%	C-	59-62%	F	0-49%

As stated in the University Calendar, it is at the instructor's discretion to round off either upward or downward to determine a final grade when the average of term work and final examinations is between two letter grades. To determine final letter grades, final percentage grades will be rounded up or down to the nearest whole percentage (e.g., 89.5% will be rounded up to 90% = A but 89.4% will be rounded down to 89% = A-).

Tentative Lecture Schedule

Date	Topic/Activity/Readings/Due Date
R Sept 6	Introduction; Course Outline; Chapter 1– Cell Differentiation and Neural Induction
T Sept 11	
R Sept 13	Chapter 2– Development of a Body Pattern
T Sept 18	
R Sept 20	Chapter 3– Neurogenesis and Migration
T Sept 25	
R Sept 27	Student presentations
T Oct 2	Midterm 1
R Oct 4	Chapter 4– Neural Differentiation
T Oct 9	
R Oct 11	Chapter 5– Axonal Pathfinding
T Oct 16	
R Oct 18	Chapter 6– Synapse Formation and Maturation
T Oct 23	
R Oct 25	Student presentations
T Oct 30	Midterm 2
R Nov 1	Chapter 7– Apoptosis
T Nov 6	
R Nov 8	Chapter 8- Activity Guided Neural Development
Nov 11 - 17	Reading Days. No lectures.
T Nov 20	
R Nov 22	Chapter 9– Experience Guided Neural Development
T Nov 27	
R Nov 29	Chapter 10- Socially Guided Neural Development
T Dec 4	
R Dec 6	Student presentations
F Dec 7	Fall Term Lectures End. Last day to withdraw with permission from Fall Term half courses.
Dec 10 - 20	Term Paper Due by 4:00pm on December 10, 2018. Winter Term Final Examinations.

Reappraisal of Graded Term Work <http://www.ucalgary.ca/pubs/calendar/current/i-2.html>

A student who feels that a piece of graded term work (term paper, essay, test, etc.) has been unfairly graded, may have the paper re-graded as follows. The student shall discuss the work with the instructor **within fifteen days** of being notified about the mark or of the item's return to the class. If not satisfied, the student shall **immediately** take the matter to the Director of Undergraduate Studies who will arrange for a reassessment of the work **within the next fifteen days**. Students in faculties without a departmental structure should take the matter to the dean or the associate/assistant dean (Academic/Student Affairs) of the faculty offering the course. The result of that reassessment should be given to the student in writing. ***The reappraisal of term work may cause the grade to be raised, lowered or to remain the same.***

Reappraisal of Final Grade <http://www.ucalgary.ca/pubs/calendar/current/i-3.html>

In the reappraisal of a final grade, the only element that will be considered is the grading of the final assessment that makes up the final mark (e.g., final examination, final project, final paper). An exception may occur when the Instructor of Record evaluates a piece of graded term work at the end of the term; that grade may also be considered in a reappraisal of final grade.

A student wishing a reappraisal of a final grade should first attempt to review the final assessment with the department or faculty offering the course. After which, the student shall obtain a Reappraisal of Final Grade form from ucalgary.ca/registrar (under Student Forms). Students must indicate exactly what error was made in marking the final assessment and/or in computing the final grade. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected.

Students wishing a reappraisal of a final grade (excluding Law courses) must submit their request by the following dates:

Fall Term – March 1

Winter Term – June 30

Spring Intersession – August 15

Summer Term – October 15

Supplemental Examinations: 30 calendar days from the date the examination was written

The reappraisal form shall be submitted to Enrolment Services who will forward it to the department head or dean of the faculty offering the course. Reappraisals of final grades are dealt with by the head of the academic unit in consultation with members of academic staff. Normally, the department/faculty will respond to a reappraisal request within thirty calendar days of its initiation. After the reappraisal is completed, the department shall return the form to the Registrar's Office who shall inform the student in writing of the decision. ***Students should be aware that the grade being reappraised may be raised, lowered or remain the same. A student may request a reappraisal of final grade only twice in one academic year (September 1 – August 31).***

Plagiarism and Other Academic Misconduct

Intellectual honesty is the cornerstone of the development and acquisition of knowledge and requires that the contribution of others be acknowledged. Consequently, plagiarism or cheating on any assignment is regarded as an extremely serious academic offense. Plagiarism involves submitting or presenting work

in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Students should examine sections of the University Calendar that present a Statement of Intellectual honesty and definitions and penalties associated with Plagiarism/Cheating/Other Academic Misconduct <http://www.ucalgary.ca/pubs/calendar/current/k-5.html>.

Academic Accommodations

The student accommodation policy can be found at: ucalgary.ca/access/accommodations/policy. Students needing an Accommodation because of a Disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities ucalgary.ca/policies/files/policies/student-accommodation-policy. Students needing an Accommodation based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the instructor.

Seating During Exams

Instructors and exam invigilators are free to ask students to move seats before an exam begins or even during an exam. Students must comply with this request and refusal to do so may warrant a charge of academic misconduct.

Absence From A Test/Exam/Presentation

Makeup tests/exams are **NOT** an option without an official University medical excuse (see the University Calendar). A completed Physician/Counselor Statement will be required to confirm absence from a test/exam for health reasons; the student will be required to pay any cost associated with this Statement. Students who miss a test/exam, or their in-class presentation, have up to 48 hours to contact the instructor and to schedule a makeup test/exam or in-class presentation. Students who do not schedule a makeup test/exam or in-class presentation with the instructor within this 48-hour period forfeit the right to a makeup test/exam or in-class presentation. At the instructor's discretion, a makeup test/exam or in-class presentation may differ significantly (in form and/or content) from the regularly scheduled test/exam/in-class presentation. **The date/content of a makeup in-class presentation will be determined by the instructor, in consultation with the student. Except in extenuating circumstances (documented by an official University medical excuse), a makeup test/exam must be written within 2 weeks of the missed test/exam during exam make-up hours provided by the department** <http://psychology.ucalgary.ca/undergraduate/exam-and-course-information#mues>. **If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam** http://www.ucalgary.ca/registrar/exams/deferred_final.

Travel During Exams

Consistent with University regulations, students are expected to be available to write scheduled exams at any time during the official December and April examination periods. Requests to write a make-up exam because of conflicting travel plans (e.g., flight bookings) will NOT be considered by the department. Students are advised to wait until the final examination schedule is posted before making any travel arrangements. **If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam**

http://www.ucalgary.ca/registrar/exams/deferred_final. Students with an exceptional extenuating circumstance (e.g., a family emergency) should contact the Department of Psychology (psyugrd@ucalgary.ca).

Freedom of Information and Protection of Privacy (FOIP) Act

The FOIP legislation disallows the practice of having student's retrieve tests and assignments from a public place. Therefore, tests and assignments may be returned to students during class/lab, or during office hours, or will be made available only for viewing during exam review sessions scheduled by the Department. Tests and assignments will be shredded after one year. Instructors should take care to not link students' names with their grades, UCIDs, or other FOIP-sensitive information.

Acknowledgments and Respect for Diversity

Our classrooms view diversity of identity as a strength and resource. Your experiences and different perspectives are encouraged and add to a rich learning environment that fosters critical thought through respectful discussion and inclusion. The Department of Psychology would also like to acknowledge the traditional territories of the people of the Treaty 7 region in southern Alberta. The City of Calgary is also home to Métis Nation of Alberta, Region III.

Wellness and Mental Health Resources

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 excellent 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, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy website (<http://www.ucalgary.ca/mentalhealth/>).

Course Credits for Research Participation (Max 2% of final grade)

Students in most psychology courses are eligible to participate in Departmentally approved research and earn credits toward their final grades. **A maximum of two credits (2%) per course, including this course, may be applied to the student's final grade. Students earn 0.5% (0.5 credits) for each full 30 minutes of participation.** The demand for timeslots may exceed the supply in a given term. Thus, students are not guaranteed that there will be enough studies available to them to meet their credit requirements. Students should seek studies early in the term and should frequently check for open timeslots. Students can create an account and participate in Departmentally approved research studies at <http://ucalgary.sona-systems.com>. The last day to participate in studies and to assign or reassign earned credits to courses is **Dec 7, 2018**.

Evacuation Assembly Point

In case of an emergency evacuation during class, students must gather at the designated assembly point nearest to the classroom. The list of assembly points is found at <http://www.ucalgary.ca/emergencyplan/assemblypoints>

Please check this website and note the nearest assembly point for this course.

Student Organizations

Psychology students may wish to join the Psychology Undergraduate Students' Association (PSYCHS). They are located in Administration 130 and may be contacted at 403-220-5567.

Student Union VP Academic: Phone: 403-220-3911 suvpaca@ucalgary.ca
Student Union Faculty Rep.: arts1@su.ucalgary.ca

Student Ombudsman's Office

The Office of the Student Ombudsmen provides independent, impartial and confidential support for students who require assistance and advice in addressing issues and concerns related to their academic careers. The office can be reached at 403-220-6420 or ombuds@ucalgary.ca (<http://www.ucalgary.ca/provost/students/ombuds>)

Safewalk

The safewalk program provides volunteers to walk students safely to their destination anywhere on campus. This service is free and available 24 hrs/day, 365 days a year.
Call 403-220-5333.

Important Dates

The last day to drop this course with no "W" notation and **still receive a tuition fee refund** is **September 13, 2018**. Last day to add a course is **September 14, 2018**. The last day to withdraw from this course is **December 7, 2018**.