

NEUR/PSYC531
Nervous System Development
Winter 2020
Instructor: Richard Dyck

Lecture Location: SA 247

Phone: 403-20-4206

Lecture Days/Time: TR/2:00-3:15

Office: AD28

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 exams; 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 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.

Assessment Methods

The final course grade will be based on:

- 1) Midterm 1 examination: 25%
 - a. 75 minutes in class on Feb 4
 - b. Multiple choice, short answer and Long answer/essay questions
 - c. Examines information covered in Chapters 1-3, in class, and any additional readings
- 2) Midterm 2 examination: 25%
 - a. 75 minutes in class on Mar 10
 - b. Multiple choice, short answer and Long answer/essay questions
 - c. Examines information covered in Chapters 4-6, in class, and any additional readings since the midterm 1 examination.
- 3) Final examination: 25%
 - a. Take home examination – assigned on April 14 and due by 5:30pm on April 24.
 - b. Examination will be accessed/delivered using D2L.
 - c. Multiple choice and short answer questions
 - d. Examines information covered in Chapters 7-10 of the textbook.
- 4) Term Paper: 25%
 - a. On any topic dealing with normal or abnormal nervous system development.
 - b. **Maximum** of 20 double-spaced pages, not including references.
 - c. 12 point Times font (about 15 characters/inch).
 - d. The paper topic, in the form of an outline, must be emailed to instructor no later than 6:00 pm Monday, March 23rd.
 - i. **Reduction of final paper grade by 5% for each 24h interval that the paper outline is late.**
 - e. 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, etc.
 - f. Paper to be e-mailed before 6:00pm April 15th, 2018.
 - i. **Reduction of 10% for each 24h interval that the paper is late, including weekends.**

Calculators, cell phones, ipads, 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

Ideally in table format with date of class, topics to be covered, and chapters/readings to be read. Due dates for tests/exams and assignments should be included in this schedule as well.

Date	Topic/Activity/Readings/Due Date (revise and add columns & rows as necessary)
M Jan 6	Winter term begin, Block Week Courses (Jan 6-10)
T Jan 14	Introduction; Course Outline; Winter Lectures Begin
R Jan 16	Chapter 1– Cell Differentiation and Neural Induction; Last day to drop Winter Term half-courses.
T Jan 21	
R Jan 23	Chapter 2– Development of a Body Pattern; Last day to drop a class without financial penalty
F Jan 24	Last day to add or swap a course
T Jan 28	
R Jan 30	Chapter 3– Neurogenesis and Migration
F Jan 31	Tuition Fee Deadline
T Feb 4	Midterm 1
R Feb 6	Chapter 4– Neural Differentiation
T Feb 11	
R Feb 13	Chapter 5– Axonal Pathfinding
Feb 16-22	Reading Week. No lectures. University open (except Family Day). Alberta Family Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
M Feb 17	Alberta Family Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
T Feb 25	
R Feb 27	
T Mar 3	Chapter 6– Synapse Formation and Maturation
R Mar 5	
T Mar 10	Midterm 2
R Mar 12	Chapter 7– Apoptosis
T Mar 17	
R Mar 19	Chapter 8- Activity-Guided Neural Development
T Mar 24	
R Mar 26	
T Mar 31	Chapter 9– Experience-Guided Neural Development
R Apr 2	
T Apr 7	
R Apr 9	Chapter 10- Socially Guided Neural Development
F Apr 10	Good Friday

M Apr 13	Non-Instructional Day, University Open
T Apr 14	Review
W Apr 15	Last day of classes, last day to withdraw from winter semester
Apr 18-29	Final Exam Period
Apr 30	End of Term

Extra Research Participation Course Credit is Not Offered for this Course.

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

Makeup tests/exams are **NOT** an option without the approval of the instructor. A student may be asked to provide supporting documentation for an exemption/special request for a make-up exam <https://www.ucalgary.ca/pubs/calendar/current/n-1.html>. . Students who miss a test/exam have up to 48 hours to contact the instructor to ask for a makeup test/exam. It's the instructor's discretion if they will allow a make-up exam. Students who do not schedule a makeup test/exam with the instructor within this 48-hour period forfeit the right to a makeup test/exam. At the instructor's discretion, a makeup test/exam may differ significantly (in form and/or content) from a regularly scheduled test/exam. Once approved by the instructor 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 <https://www.ucalgary.ca/registrar/exams/deferred-exams>.

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

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

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

Academic Accommodations

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>.

Academic Misconduct

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <http://www.ucalgary.ca/pubs/calendar/current/k.html>

Instructor Intellectual Property

Course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). These materials may NOT be reproduced, redistributed or copied without the explicit consent of the professor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

Copyright Legislation

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

Freedom OF Information and Protection of Privacy

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary

Student Support and Resources

<https://www.ucalgary.ca/registrar/registration/course-outlines>

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.

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

Important Dates

The last day to drop this course with no "W" notation and **still receive a tuition fee refund** is **January 23, 2020**. Last day for registration/change of registration is **January 24, 2020**. The last day to withdraw from this course is **April 15, 2020**.