

PSYC/NEUR 531	Nervous System Development	Winter 2017
<b>Instructor:</b>	Richard Dyck	<b>Lecture Location:</b> SS117
<b>Phone:</b>	403-220-4206	<b>Lecture Days/Time:</b> TuTh/12:30-1:45
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<b>Office Hours:</b>	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 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](http://psyc.ucalgary.ca/undergraduate/program-learning-outcomes)), and the expected level of achievement.

Course Learning Outcomes	Program Learning Outcomes Met	
	Primary	Second
Outline how the nervous system changes through a lifetime	1	10
Explain how evolutionary change can be effected through changes in development	1	8
Explain the mechanisms involved in cellular differentiation and fate specification of neural cells	1	8
Explain the molecular, physiological and functional changes that occur in neuronal cells across the lifespan	1	8
Explain how synaptic connections are formed and modified during development	1	8
Explain how interactions with the world continuously update and adapt the brain's functional architecture.	1	8
Outline the relationship between behavioural development and structural and physiological aspects of brain development	1	8
Explain how abnormalities in developmental mechanisms lead to brain disorders	1	8

Notes. PLO numbering corresponds to the left column in the table below.

Program Learning Outcomes	Level Met	Primary Instructional Method	Secondary Instructional Method	Primary Assessment Method	Secondary Assessment Method
1. Demonstrate knowledge of psychological sciences	A	Direct	Independent	W Exams	W Assign
2. Think critically and solve problems	A	Direct	Indirect	W Assign	Oral
3. Conduct research and analyze data: <i>Research methods</i>	C	Direct	Independent	W Exams	W Assign
4. Conduct research and analyze data: <i>Data analysis</i>	N	NI	NI	NT	NT
5. Communicate effectively in writing and in person: <i>Written communication</i>	A	Indirect	Independent	W Exams	W Assign
6. Communicate effectively in writing and in person: <i>Oral communication</i>	A	Independent	Interactive	Oral	NS
7. Communicate effectively in writing and in person: <i>Teamwork and interpersonal effectiveness</i>	C	Interactive	Independent	Oral	NS
8. Demonstrate information literacy	A	Direct	Independent	W Exams	W Assign
9. Operate ethically and with integrity	I	Direct	NA	W Exams	Oral
10. Apply psychological knowledge and skills	A	Direct	Independent	W Exams	W Assign

Notes. Level met: I = introductory level, C = competency level, A = advanced level, N = not met. Instructional methods: Direct, Interactive, Indirect, Independent, Experiential, NI = not instructed. Assessment methods: MC = multiple choice tests/exams, W Exams = written tests/exams, W Assign = written assignments/papers, Oral = oral, Demo = demonstration of ability, NA = not assessed, NT = not taught, NS = no secondary method.

### Prerequisites

NEUR/PSYC 475 – Behavioural Pharmacology

### Required Text

The required text for the course is: Sanes, D.H., Reh, T.A., and Harris, W.A. (2012) Development of the Nervous System, Academic Press. We will be covering a majority of the textbook. The textbook can be purchased, new, at the UofC Bookstore or online sources like Amazon.ca. There should be numerous used copies available, too, as this textbook has been used since it was first published in 2012.

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 Feb 7
  - 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: 20%
  - a. 75 minutes in class on Mar 14
  - 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: 20%
- a. 75 minutes – registrar scheduled
  - b. Multiple choice, short answer and Long answer/essay questions
  - c. Examines information covered in Chapters 7-9, information covered in class, and any additional readings since the midterm 2 examination.

**IMPORTANT\*** Students are not permitted to bring any materials to exams, other than pen/pencil and eraser.

- 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.
  - c. 12 point Times font (about 15 characters/inch).
  - d. The paper topic, in the form of an outline, must be approved by instructor no later than 4:00 pm March 20th.
    - 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 handed in or e-mailed before 4:00pm April 14th, 2017.
    - i. **Reduction of 10% for each 24h interval that the paper is late.**

#### **Department of Psychology Grade Distribution Policy**

The distribution of grades in Psychology courses (the percentage of A grades, B grades, etc.) will be similar to the distribution of grades in other courses in the Faculty of Arts. The Department monitors the grade distributions of 200-, 300-, and 400-level courses in the Faculty to ensure that the grade distributions in Psychology courses are comparable. Based on these reviews, students can expect that 1) up to 30% of grades in 200- and 300-level psychology courses will be “A” grades (A+, A, and A-), and 2) up to 40% of grades 400-level psychology courses will be “A” grades.

#### **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.

In this course there will be no rounding up of final grades, especially in light of the opportunities students have to increase their final grade via research participation.

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)
T Jan 10	Introduction; Course Outline;
R Jan 12	Chapter 1– Neural Induction
T Jan 17	
R Jan 19	Chapter 2– Polarity and Regionalization
F Jan 20	Last day to drop Winter Term half-courses.

M Jan 23	Last day to add or swap Winter Term half courses. Last day for change of registration from audit to credit or credit to audit.
T Jan 24	
R Jan 26	Chapter 3– Birth and Migration
T Jan 31	
R Feb 2	Student presentations
T Feb 7	Midterm 1
R Feb 9	Chapter 4– Determination and Differentiation
T Feb 14	
R Feb 16	Chapter 5– Axon Growth and Guidance
Feb 19-26	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 20	Alberta Family Day, University closed (except Taylor Family Digital Library, Law, Medical, Gallagher and Business Libraries). No lectures.
T Feb 28	
R Mar 2	Chapter 6– Target Selection
T Mar 7	
R Mar 9	Student presentations
T Mar 14	Midterm 2
R Mar 16	Chapter 7– Survival and Growth
T Mar 21	
R Mar 23	Chapter 8- Synapse Formation and Function
T Mar 28	
R Mar 30	Chapter 9– Refinement of Synaptic Connections
T Apr 4	
R Apr 6	Student presentations
T Apr 11	Review
W Apr 12	Winter Term Lectures End. Last day to withdraw from full courses and Winter Term half courses.
F Apr 14	Term Paper Due by 4:00pm. Good Friday. No Classes. University Closed
Apr 15-26	Winter Term Final Examinations.

### Reappraisal of Grades

A student who feels that a piece of graded term work (e.g., term paper, essay, test) has been unfairly graded, may have the work re-graded as follows. The student shall discuss the work with the instructor within 15 days of being notified about the mark or of the item's return to the class; no reappraisal of term work is permitted after the 15 days. If not satisfied, the student shall immediately take the matter to the Head of the department offering the course, who will arrange for a reassessment of the work within the next 15 days. The reappraisal of term work may cause the grade to be raised, lowered, or to remain the same. If the student is not satisfied with the decision and wishes to appeal, the student shall address a letter of appeal to the Dean of the faculty offering the course within 15 days of the unfavourable decision.

In the letter, the student must clearly and fully state the decision being appealed, the grounds for appeal, and the remedies being sought, along with any special circumstances that warrant an appeal of the reappraisal. The student should include as much written documentation as possible.

### **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.

### **Academic Accommodation**

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/](http://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\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy_0.pdf).

Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than 14 days after the start of this course.

### **Absence From A Test/Exam**

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 have up to 48 hours to contact the instructor and to schedule a makeup test/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. 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-review-and-makeup-exams>. 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](http://www.ucalgary.ca/registrar/exams/deferred_final). Under no circumstances will this be accommodated by the department.

### **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](http://www.ucalgary.ca/registrar/exams/deferred_final). Under no circumstances will this be accommodated by the department.**

### **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.

### **Course Credits for Research Participation**

#### **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 **April 12, 2017**.

### **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](mailto:suvpaca@ucalgary.ca)

**Student Union Faculty Rep.:** [arts1@su.ucalgary.ca](mailto: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](mailto: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 **January 20, 2017**. Last day for registration/change of registration is **January 23, 2017**. The last day to withdraw from this course is **April 12, 2017**.