



Dr. Rebecca Merkley

rebecca.merkley@carleton.ca

Office Hours: by appointment

EDUCATIONAL NEUROSCIENCE

CGSC4900C/5901W – Winter 2023

Class Information

Time: Tuesdays
2:35pm-5:25pm
DT 2203

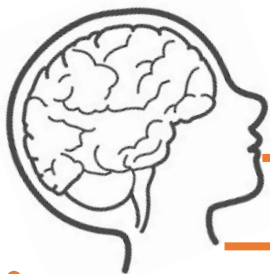
Course website:

brightspace.carleton.ca

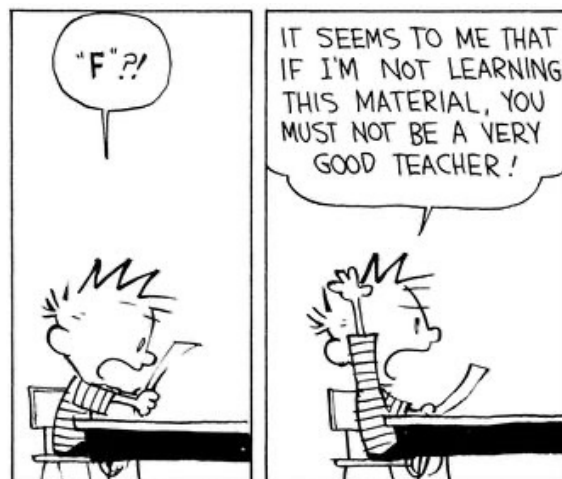
Course Prerequisites: Fourth year standing or permission of the Department

Course Description

This course reviews research from developmental cognitive neuroscience on how people learn. Discussions will focus on how to make connections between relevant research and education policy and practice. Topics include multilingualism, neurodiversity, and cognitive development across cultures.



“Education is the most powerful weapon which you can use to change the world.”
— Nelson Mandela



Readings

The readings for this course include scientific articles, blog posts, white papers, and articles in the popular press. These will all be available via the course website.

Learning Outcomes

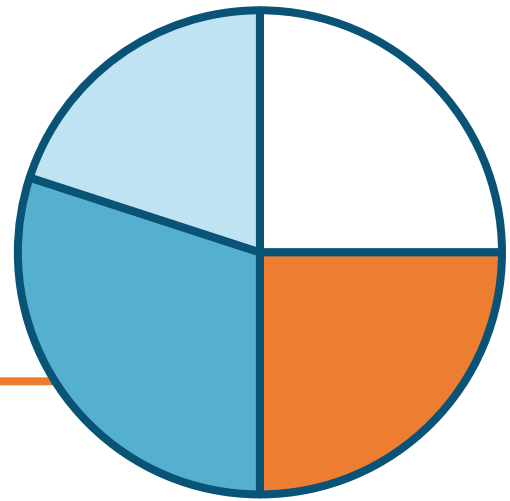
- Understand theories and methods in educational neuroscience
- Compare and contrast evidence reported in research papers
- Think critically about implications of research for education



Evaluation

Your grades will be based on participation, presentations, and writing assignments. There are no exams.

Detailed descriptions of all assignments are on Brightspace.



■ Discussion Lead

■ Midterm Project

■ Final Paper

■ Participation

Discussion Lead (25%)

You will be required to give a **15-minute** presentation and lead the subsequent discussion. You should review the literature assigned AND other relevant literature that you have found. The aim of the presentations is to highlight different perspectives on the discussion questions. You can present live or pre-recorded.

Midterm Paper (25%)

Your midterm paper (~1500 words) should extend your thinking about one of the discussion topics by critically reviewing evidence from multiple sources.

Due February 14

Final Project (30%)

Your final project should synthesize course materials for a broader audience. It may take any format, including: 1- a video overview of a course topic for a target audience; 2- a web-based summary of online resources 3- a white paper for an NGO.

Outline Due March 14.

Final Due April 12.

Participation (20%)

Each week you are asked to post a discussion question about the readings in a forum on Brightspace and complete a brief quiz about the readings. You are expected to direct and reflect on your own learning. Engagement with course content through oral and written discussion is important. Sharing different views and opinions in an open manner is particularly valued.



Course Expectations & Policies

This is tentatively an “in-person” course, which means that you are expected to attend weekly. Your mental and physical health are the top priority. You should come to class prepared, having done the readings. We may adjust the class format in keeping with public health guidance and our comfort levels. Some lectures may be pre-recorded to maximize class time for discussion.

Civility and Privacy: The University is a place of open discussion and free inquiry. It is expected that you will be respectful and considerate of your classmates and our learning environment will be free from discrimination and harassment

Late Assignments: You may use a ‘no questions asked’ 3-day grace period for one assignment (except for Discussion Lead) and turn it in without penalty. If you need other extensions or accommodations, please contact the instructor at least a week ahead of the deadline.



Course Schedule

Week	Date	Lecture Topic	Discussion Question	Readings
1	Jan 10	Welcome & Introduction	NO CLASS MEETING	
2	Jan 17	Theories & Methods	Should neuroscience research inform education policy and practice?	Dougherty & Robey (2018) Thomas (2018)
3	Jan 24	Brain Plasticity	Are there critical periods in human brain development?	Werker & Hensch (2015)
4	Jan 31	Behavioural Genetics	How much variation in academic ability can be explained by genes?	Ritchie & Tucker-Drob (2018) Sokolowski & Ansari (2019)
5	Feb 7	Neurodiversity	Are specific learning disorders really disorders?	Peters & Ansari (2019) Learning for All (2013)
6	Feb 14	Language	Should students get instruction in their mother tongue?	Beltrán-Grimm (2022) Norbury et al. (2015)
WINTER BREAK				
7	Feb 28	Executive Functions	Should education interventions target executive functions?	Miller-Cotto et al. (2021)
8	Mar 7	Reading	Should reading instruction be based in evidence?	Romeo et al. (2022) Right to Read (2022)
9	Mar 14	Mathematics	Are boys better suited to STEM subjects than girls are?	Smith et al. (2019) Kersey et al. (2019)
10	Mar 21	Teachers as Learners	Should teachers learn about the science of learning?	Ansari et al. (2017) Brault Foisy et al. (2020)
11	Mar 28	Social Emotional Learning	How have students and teachers been impacted by the pandemic?	TBD
12	Apr 4	Current Debates in Education	How should schools prepare students for the future?	TBD
13	Apr 11	Education Policy	Should neuroscience research inform education policy and practice?	TBD

Additional Information

In accordance with the Carleton University Undergraduate Calendar (p 34), the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100

B+ = 77-79

C+ = 67-69

D+ = 57-59

A = 85-89

B = 73-76

C = 63-66

D = 53-56

A- = 80-84

B- = 70-72

C- = 60-62

D- = 50-52

F = Below 50

Grades entered by Registrar:

WDN = Withdrawn from the course

DEF = Deferred

Academic Regulations

University rules regarding registration, withdrawal, appealing marks, etc. can be found on the university's website, here:

<https://calendar.carleton.ca/undergrad/regulations/academic-regulationsoftheuniversity/>

Copyright policy: Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use.

Important Information

- Students must always retain a copy of all work that is submitted.
- All final grades are subject to the Dean's approval.
- For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting <https://carleton.ca/its/all-services/email/carleton-student-email/>

Academic Accommodations

Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation (e.g. religious, pregnancy, student activities) is known to exist. For more details, see <https://students.carleton.ca/services/accommodation/>

Accommodations for Students with Disabilities: Paul Menton Centre for Students with Disabilities (PMC) provides services to students. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made.

Plagiarism

Plagiarism is presenting, whether intentionally or not, the ideas, expression of ideas, or work of others as one's own. Plagiarism is a serious offence that cannot be resolved directly by the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation when an instructor suspects a piece of work has been plagiarized. For more details see: <https://carleton.ca/secretariat/wp-content/uploads/Academic-Integrity-Policy-2021.pdf>

For a list of dates and deadlines, including holidays and exam dates, please visit:

<https://carleton.ca/registrar/registration/dates/academic-dates/>

March 15th, 2023 is the last day for academic withdrawal for winter courses

Statement on Student Mental Health

As a University student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. Here is a list that may be helpful:

Emergency Resources (on and off campus): <https://carleton.ca/health/emergencies-and-crisis/emergency-numbers/> Carleton Resources:

- Mental Health and Wellbeing: <https://carleton.ca/wellness/>
- Health & Counselling Services: <https://carleton.ca/health/>
- Paul Menton Centre: <https://carleton.ca/pmc/>
- Academic Advising Centre (AAC): <https://carleton.ca/academicadvising/>
- Centre for Student Academic Support (CSAS): <https://carleton.ca/csas/>
- Equity & Inclusivity Communities: <https://carleton.ca/equity/>

Off Campus Resources:

- Distress Centre of Ottawa and Region: (613) 238-3311 or TEXT: 343-306-5550, <https://www.dcottawa.on.ca/>
- Mental Health Crisis Service: (613) 722-6914, 1-866-996-0991, <http://www.crisisline.ca/>
- Empower Me: 1-844-741-6389, <https://students.carleton.ca/services/empower-me-counselling-services/>
- Good2Talk: 1-866-925-5454, <https://good2talk.ca/>
- The Walk-In Counselling Clinic: <https://walkincounselling.com>

Statement on Pandemic Measures

It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are [a number of actions you can take](#) to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.

Feeling sick? Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you should follow Carleton's [symptom reporting protocols](#).

Masks: Masks are no longer mandatory in university buildings and facilities. However, we continue to recommend masking when indoors, particularly if physical distancing cannot be maintained. We are aware that personal preferences regarding optional mask use will vary greatly, and we ask that we all show consideration and care for each other during this transition.

Vaccines: While proof of vaccination is no longer required to access campus or participate in in-person Carleton activities, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible and submit their booster dose information in [cuScreen](#) as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 response and health and safety requirements please see the [University's COVID-19 website](#) and review the [Frequently Asked Questions \(FAQs\)](#). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca.