Psych 3L03
Neuroscience Laboratory

Instructor: Dr. Brett Beston (bestonbr@mcmaster.ca)

Course Description:
This course is designed to help students develop critical thinking skills relevant for effective research design, data analysis, and interpretation. In this course, students will have the opportunity to learn about various approaches in psychology, neuroscience & behaviour. Working in groups, students select a topic area, design an experiment based on background readings, obtain, collect and analyze data in class, make oral presentations, and prepare written reports. The theme for the course is the “Development of the Brain Throughout the Life-Span”. A series of 5 videos will be used to introduce the different stages of development.

Course Objectives:
1. Gain Experience in research design including, forming experimental hypotheses, designing experiments, collecting data, analyzing data, interpreting the empirical results, critically evaluating relevant literature.
2. Gain experience communicating ideas and research findings via written and verbal presentations.

Course Evaluation:

<table>
<thead>
<tr>
<th>Evaluation Breakdown</th>
<th>Weighting</th>
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<tr>
<td>5 assignments and presentations (10% each, lowest grade dropped)</td>
<td>40%</td>
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<tr>
<td>Neuroanatomy test</td>
<td>30%</td>
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<tr>
<td>Lab Report</td>
<td>25%</td>
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<tr>
<td>Participation</td>
<td>5%</td>
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Lectures, Discussions, Presentation:

The theme for the course is Harnessing Neuroplasticity for Clinical Applications.

Jan 9, Intro to translating neuroscience, video -- Dr Thomas Insel
  • assignment Due Jan 15.

Jan 16, Discussion of the paper, video Dr Daniel Wolpert,
  • Movement based therapy assignment Due Jan 22.

Jan 23, Presentation/Discussion of movement system based therapies, video Dr Ramirez & Liu
  • 21st century neuroscience techniques assignment due Jan 29.

Feb 5, Presentation/Discussion of 21st century neuroscience techniques, video Dr Blakemore
  • Neurobiology of the adolescent brain assignment Due Feb 12

Feb 13, Presentation/Discussion of neurobiology of the adolescent brain

March 6, video Dr Sinha
  • Taking neuroscience research beyond the lab assignment Due March 12

March 27th, Presentation/Discussion of taking neuroscience research beyond the lab assignment

After the video, there will be a discussion about the issues related in the video. Following each of these discussions, students will be assigned into small groups or given an individual assignment.

• Your group will write a short paper (2 pages double-spaced) with an annotated reference list to be submitted 24 hours before class.
• Students will read and grade the summaries before class.
• In class, each group will make a short presentation (5 min) of their research.

Creative Problem Solving Exercises
There will be 2 Creative Problem Solving lab exercises. These are designed to help you think about research questions and be able to form questions for an experiment and bigger questions for a program of research. Students will work in group and then present the results of their work at the end of the class.

• Sept 21 -- Part 1 Creative problem solving
• Sept 28 -- Part 2 Creative problem solving

Neuroanatomy
Students will be given an opportunity to gain an in-depth understanding of neuroanatomy through hands-on sheep brain dissection. Students will be evaluated through a “bell ringer exam” whereby students will be required to identify structures of the brain at several stations.

- March 3, Neuroanatomy test

**Laboratory Experiment**

The main research project will involve a comprehensive analysis of a topic related to neuroscience. Students will be put into groups (assigned according to your interests) and will be responsible proposing a meaningful experimental question, ethics proposal, and designing an effective experiment. We will then collect data, analyze the results, and interpret the results. Groups will be responsible for handing in a full lab report.

**Participation / Attendance**

Participation grades will be given considering student’s performance on: attending class and group meetings, contributing to class and group discussions, contributing to projects and assignments, providing feedback to other groups and providing feedback.
Course Policies:

Details of the course requirements may change. If it becomes necessary to make changes to some part of the course during the term, reasonable notice and communication will be provided between the students and lecturer. Updates will be discussed in class and will be posted on the class web page.

The instructor reserves the right to scale the final marks up or down depending on an individual's overall performance based on special circumstances.

Scaling:

A+ = 90-100  B+ = 77-79  C+ = 67-69  D+ = 57-59  F = 0-49
A = 85-89  B = 73-76  C = 63-66  D = 53-56
A- = 80-84  B- = 70-72  C- = 60-62  D- = 50-52

*Final marks may be adjusted up or down on an individual basis, in light of special circumstances and or the student's overall performance in the course

Missed Work:

It is your responsibility to submit all rationale for missed work as soon as possible to the Associate Dean of your faculty. It is also your responsibility to speak with your professor as soon as possible. Senate regulations for petitions for special consideration have always required that: "40. The student shall make a prompt and timely request for special consideration." Late work will be deducted 5% per day. Work that is submitted beyond 5 days after the due date will not receive credit (0%).

e-mail Policy:

- e-mails must originate from your designated McMaster e-mail account.

- Please include the course code “3L03” in the subject heading.

- If we (your professor or TA) need to contact you, we will send the e-mail to your mcmaster.ca account. You should monitor this account regularly.

- e-mails sent from third-party providers (yahoo, hotmail, cogeco, sympatico, etc.) are likely to be missed. We have this policy for three reasons: (1) to reduce the amount of incoming spam to our accounts; (2) to ensure that we know with whom we are communicating; and (3) to teach the professional use of e-mail. Remember: E-mails to your professors are professional communications.

- Please do your best to use correct spelling and punctuation, be polite, and to the point.

Website Policy:
This course uses ‘Avenue to Learn’. You are expected to check this website with regularity for announcements, updates, discussion board postings, and other valuable information. It is your responsibility to keep up with the information provided on this site.

Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

**Academic Integrity**

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at [http://www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity)