Syllabus & Course Information
Learning & Memory: Mechanisms & Pathologies (MEDS4026)
Spring Semester, 2021

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Class Meetings using a Flipped Classroom approach:
  In a flipped classroom students watch a recorded lecture on their own at a time that is convenient for them (i.e. asynchronously) before coming to class. The class then meets synchronously online to discuss the lecture material. The discussion will typically focus on questions that the students may have about the lecture material along with opportunities to expand on aspects that may be of particular interest.
  The synchronous class meetings will be online from 2:00 to 3:25 PM on Tuesdays & Thursdays. A link to the online meetings can be found on the course homepage.

Objectives & Topics: One of the main objectives of the course will be to convey a sense of the interesting questions, the fascinating examples, and the exciting answers that pervade the fields of neuroscience and neurology. Special attention will be devoted to conditions that enhance our understanding of the processes of learning and memory. Students will also gain an appreciation for the role of "pathology as the great teacher."

Active learning will be an important part of the students' experience in this course, and to that end the classes will be highly interactive. Students will be expected to come to class having done the assigned reading and be prepared to contribute questions of their own and to suggest answers to other students' questions. During some weeks students will be divided into groups and each group will be expected to teach the rest of the class about a specific topic or reading selection.

<u>Examples of topics which may be discussed are:</u>
- The Lost Mariner – a study in memory loss with a discrete biochemical basis.
- The Jennifer Aniston neuron, a single cell that responds only to pictures of Jen. What do such 'concept cells' tell us about the building blocks of declarative memory?
- Eidetikers – The Human Camera and other dramatic examples of individuals with photographic memories. How does it work and what are the pros & cons of having one?
- Alzheimer's and Mad Cow Diseases – What do they have in common and what can they teach us about how memory works?
- Synesthesia: musical notes with color and words that have flavors – mixing the senses through neuroanatomy.
- Effective versus ineffective ways to study – what does science have to say?
- Animal learning – how simple can a system be and still be able to learn & remember?
- New tools for answering old questions about memory & learning – Brainbow, Clarity, Optogenetics and more.

Readings: There is no required textbook, but there will be assigned readings of primary and review papers. In some cases there may be online websites devoted to a topic that will be covered in class and students will be expected to utilize these resources as part of the active learning experience.

Active Learning: As stated above, active learning is an important component of this course. In addition to in-class discussions, students will write periodic reflective essays, some of which will be shared with the rest of the class. There may also be student-led teaching exercises. There will be one group project and one individual term paper. No written exams are planned (unless the in-class discussions prove to be disappointing).

- The purpose of the reflective essays is to encourage the student to think independently and deeply about some aspect of a topic that has been recently presented in class. Evidence of such in depth thought should include references to articles from literature which the student has read independently.

- The length of reflective essays will typically be in the range of one typed page, single spaced, normal size font (not counting figures and references.
- In addition to its content, the essay will be graded on clarity of expression. This is in accord with the concept of writing across the curriculum. Each essay will be graded on a scale of 1-20 points. If a reflective essay is poorly written (e.g. has substantial grammatical or spelling errors, is lacking in clarity, etc.) the student will be notified that the grade is conditional on receipt of a corrected version within one week or the score for that essay will convert to zero.

Grading Policy: Because this course has not heretofore been taught as a flipped classroom, this syllabus should be considered as a living document rather than having been graven in stone. Thus, some changes may be made to the format as well as to the grading policy as the term progresses. This will permit building on activities that are proving successful or making corrections to those that are not working well.

The approximate weights given to each of the assessment modalities will be:

Weekly reflective essays & teaching exercises	50%
Contribution to in-class discussion	10%
Group project	20%
Individual term paper	20%

The grading scale for the entire course will be:

90% to 100%	A/A-
80% to 89%	B+/B/B-
70%-79%	C+/C/C-
60% to 69%	D/D-
<50%	F

On occasion the ranges may be extended to account for natural breaks in the distribution of scores or to compensate for significant variations in the difficulty of the grading on individual assessment components. In no case will a student's grade be decreased based on the above scale.

The various assignments and discussions are designed so that scores will result in grades as follows:

A grade of <u>A</u> reflects a full understanding of the factual material presented, with a good ability to use the information creatively to solve problems. Scores of 90% or above will receive A or A- grades.

A grade of <u>B</u> reflects a significant understanding of the factual material presented, with a reasonable ability to use the information creatively to solve problems. Scores of 80% to 89% will receive B-, B or B+ grades.

A grade of <u>C</u> reflects an adequate understanding of the factual material presented, but with a limited ability to use the information creatively to solve problems. In general, scores of 70% to 79% will receive C grades.

Any student who accumulates less that 50% of the possible points on the combined assessments will receive a grade of <u>F</u>.