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NEUR 110N.01: Introduction to Brain Diseases

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Introduction to Brain Diseases (NEUR 110N)
Spring , 3 credits
Tuesday/Thursdays 3:30-4:50 pm

Course Information:

Term: Spring 2022
CRN: 33983
TTh: 3:30 – 4:50 pm
Room: Jeannette Rankin Hall (JRH) 202

Instructors:

Richard Bridges, PhD (Division of Biological Sciences, Neuroscience Program)
Office: HS 409 Phone: 243-4972
Office hours: TBA

Course Logistics:

This course will be offered in the traditional face:face format. The delivery mode may need to be modified depending upon factors related to the Covid-19 pandemic.

Course Description:

This course is designed to provide both non-science and science students with a basic understanding of brain diseases and injuries, such as spinal cord injury, Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis (ALS), epilepsy, depression, and addiction. The goal of the course is to provide a basic understanding of the structure and function of the nervous system and how these change in brain diseases and injury. Course materials will be presented at a foundational level that would be appropriate to yield an "educated citizenry", such that students can make informed decisions as a community member, family member, caregiver or patient. For each of the disorders surveyed (which may vary from year to year), an emphasis will be placed on linking the observed symptoms and functional losses that accompany the disease with the underlying biological changes that occur in the brain. The understanding of these disease processes will also be examined in context with general brain function and the therapies used to treat the diseases. Students will also develop an appreciation for the linkages between basic and clinical research in neurological diseases as well as the importance of disease models in the development of new therapies.

Learning Outcomes:

1. Students will be able to understand and explain to non-scientists the basic symptoms and etiology of common diseases and disorders of the brain and spinal cord
2. Students will grasp the link between neural injury and loss of function
3. Students will appreciate the fundamental vulnerabilities shared by neurons and how different brain disease have similar underlying mechanisms
4. Students will appreciate the fundamental aspects of neuronal communication and how disruption in these processes leads to specific symptoms
5. Students will gain a better understanding of the role that genetics play in specific CNS disorders
6. Students will appreciate the significance of basic research and disease models in understanding the causes of brain disease, as well as in the development of new therapies

Prerequisites:

None

Required Textbook:

It is anticipated that reading materials will mostly consist of review articles. Materials will be posted on Moodle.

Professionalism and Student Conduct:

All students must act professionally and practice academic honesty. Academic misconduct is subject to academic penalty by the course instructors and/or disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Student Conduct Code can be found at http://www.umt.edu/vpsa/policies/student_conduct.php.

Plagiarism:

Plagiarism is a form of academic dishonesty. This is using anyone else's work as your own. This includes another student's, another author's, etc. If you plagiarize anyone else's work in this class, you WILL fail the assignment, and you may fail the course. What is plagiarism? While everyone has their own concept of this, the guide that will be used for this class is either copying more than six consecutive words verbatim or using more than two sentences in an assignment that reflect the original author's phrasing, sentence structure, and meaning rather than the student's own thoughts, with or without proper citation.

Students with Disabilities:

Students with disabilities may request reasonable accommodations by contacting the course instructor. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office of Disability Equity. "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, consult http://www.umt.edu/dss/Current_Students/default.php.

Course Materials:

Instructors will place course materials online in Moodle. Students are responsible for online material in addition to the assigned readings and information presented in class.

Evaluations:

Students will evaluate the instructors online. The evaluations will be available to students during the last week of the semester.

Attendance Policy:

Attendance at all lectures is expected of students. Contact the course coordinator if absences are anticipated or in case of illness or emergency. Instructors may deduct points for lecture

absences at their discretion. Seminar attendance may be assigned and available for extra credit at the discretion of the instructors.

Test Policy:

No tests will be given early. Only under extraordinary circumstances will an excused absence from a test be permitted. When such an exception is needed, a written request needs to be made to the instructor. Makeup tests may be given in either written or oral format and must be taken within one week of the original test date. Students have one week from the time the test is returned to resolve any grading questions. Such requests must be written, attached to the original test and submitted to the course instructor.

2022 Course Topics:

Each disease topic will typically be distributed over multiple class meetings. During these class sessions material will cover symptoms, underlying changes, anatomy, pathology, cellular & molecular mechanisms, therapies and intervention.

Tentative Grading:

Two Midterm Exams: 100 pts/each = 200

Final Exam: 100 pts

Class Participation/Questions: 50 pts

Total Class points: 350

Class Participation/Questions:

Class activities will include a number of learning exercises that are dependent upon active student participation, such as: asking questions, sharing new articles, finding reading materials, etc. Students will be assigned to these activities throughout the semester, each of typically are assessed at 5 pts each.

The top 10 to 15%-tile of students will receive a grade of **A** or **A-**. The median score of the class will approximately define the partition between grades of **B** and **C**. A total score of 200 points (57%) or less will be failing (grade of **F**). Pluses (+) and minuses (-) will be used (**A**, **A-**, **B+**, **B**, **B-**, **C+**, **C**, **C-**, **D+**, **D**, and **D-**).

The % cutoff points between grades may be adjusted downward (in favor of the student) to better reflect score distributions (i.e., curve) and natural breaks in the class scores.

Lecture and Discussion Schedule:

<i>Date</i>	<i>Topic</i>
T Jan 18	Introduction and Discussion <i>Why are diseases of the nervous system often viewed differently from medical and social perspective?</i>
Th Jan 20	CNS Trauma, SCI & TBI & Stroke
T Jan . 25	CNS Trauma, SCI & TBI & Stroke
Th Jan 27	CNS Trauma, SCI & TBI & Stroke

T Feb 1	CNS Trauma, SCI & TBI & Stroke
Th Feb 3	
T Feb 8	Multiple Sclerosis
Th Feb 10	Multiple Sclerosis
T Feb 15	Amyotrophic Lateral Sclerosis
Th Feb 17	Amyotrophic Lateral Sclerosis
T Feb 22	Review Session
Th Feb 24	Exam 1
T Feb 26	Seizures and Epilepsy
Th Feb 25	Seizures and Epilepsy
T Mar 1	Parkinson's Disease
Th Mar 3	Parkinson's Disease
T Mar 8	Alzheimer's Disease
Th Mar 10	Alzheimer's Disease
T Mar 15	Review
Th Mar 17	Exam 2
T Mar 22	Holiday Spring Break Day 2021
Th Mar 24	Holiday Spring Break Day 2021
T Mar 29	Schizophrenia
Th Mar 31	Schizophrenia
T Apr 5	Addiction
Th Apr 7	Addiction
T Apr 12	Depression
Th Apr 14	Depression
T Apr 19	TBA
Th Apr 21	TBA
T Apr 26	TBA
Th Apr 28	TBA
T May 3	TBA
Th May 5	TBA
May 9 -May 13	Finals