

**BIOL 6311 and 5311**  
**Fall Semester 2024**  
**Neurobiology of brain diseases**

**Instructor:** Kyung-An Han, Ph. D.  
Office: 3.152 Biosciences Building  
Hours: by appointment  
Email: [khan@utep.edu](mailto:khan@utep.edu)

**Class Meetings:** 4:00 PM - 6:30 PM, M

**Classroom:** Biology 203

**Course Objectives:** Students are expected to gain contemporary knowledge and insights into the genetic, molecular, cellular and neural basis of the brain diseases that are relatively prevalent as listed below. Students are also expected to work on a collaborative research project on one of the diseases covered in the class. For the project, students are expected to develop a hypothesis on a potential environmental risk factor(s) for a selected disease and appropriate approaches to test the hypothesis in animal models or human subjects. Together, students are expected to acquire and advance science literature reading and presentation, analytical, logical, and creative skills among others.

**Topics to be covered:**

Alzheimer's Disease and related dementias (ADRD)  
Parkinson's and Huntington's diseases  
Autism spectrum disorders  
Depression

**Text:** A general textbook – e.g *Neuroscience* (Purves et al., Sinauer Associates) or *Human Anatomy & Physiology* (Elaine N. Marieb & Katja Hoehn, Pearson Benjamin Cummings) - is recommended for background information on nervous system development, anatomy, and functions. Readings on review and primary research papers on selected topics will be provided.

**Grading:**

|   |     |
|---|-----|
| Class participation and presentation  | 70% |
| 20% Exam, quizzes, homework   |     |
| 50% Presentations and participations  |     |
| – terms/concept/background presentations, research paper presentations, peer feedback, etc. |     |
| Collaborative research project  | 30% |
| 5% team oral presentation   |     |
| 25% essay (individual effort)   |     |

[Class presentations](#) are on concepts, background information, and primary research articles on the aforementioned diseases and will be done as a group as well as individually.

[Collaborative research project](#) is a collaborative team work to develop a research proposal in which each team develops a hypothesis on how a selected environmental factor contributes to Alzheimer's disease and related dementia (or other brain disease with approval) upon interacting with a newly identified genetic risk factor and how the hypothesis will be tested in an animal model (design research approaches).

The hypothesis and approaches **require justification**, which should be provided through critical review of published research papers and should include **significance of the project and impact of potential findings**.

The project shall be presented as a team ([oral ppt presentation; team task, peer-evaluated](#)) as well as submitted as an [essay \(individual task\)](#). The essay should be [minimum 5 pages](#) containing the following:

Page 1: title of the project, name

Page 2-4: main content listed below

Overarching goal of the project

Critical review of research papers for the project

Hypothesis and approaches to test it

Significance and impact

Page 5 or more: references (list all authors if less than 20, journal name, year, volume, page, doi)

Format: margins 1 inch, font 11, single spaced

[Final grades will be assigned as follows: A=90-100, B=80-89, C=65-79, D=50-64, F=0-49](#)

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148 or by email to [cass@utep.edu](mailto:cass@utep.edu), or visit their office located in Union East, Room 106. For additional information, please visit the CASS website at [www.sa.utep.edu/cass](http://www.sa.utep.edu/cass).

**Academic Dishonesty and Expected Behavior:** Students at UTEP are expected to behave in a manner that supports the integrity of the academic system. Cheating, plagiarism and collusion are unethical and prohibited, and will result in disciplinary action. Violations will be reported to the Dean of Students. A [zero tolerance policy for plagiarism](#) will be applied. For more information, please check the web site: [www.plagiarism.org](http://www.plagiarism.org)

**PLAGIARISM/ACADEMIC DISHONESTY STATEMENT:** Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording: it is also not acceptable. Do not submit work under your name that you did not do yourself. You may not submit work for this class that you did for another class. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. <http://www.utep.edu/dos/acadintg.htm> for detailed information.

### Course Schedule

| Lectures  | Topic  |
|-----------|--|
| Section 1 | Overview of the class,<br>Overview on the neurophysiology, neural structures & functions<br>(ref: any <i>Neuroscience</i> or <i>ANP textbook</i> ) |
| Section 2 | Alzheimer's disease and related dementias<br>(review and research articles posted in blackboard)   |
| Section 3 | Basal ganglia dysfunction: Parkinson's and Huntington's diseases<br>(review and research articles posted in blackboard)                            |
| Section 4 | Autism Spectrum Disorder<br>(review and research articles posted in blackboard)  |
| Section 5 | Depression<br>(review and research articles posted in blackboard)  |

The schedule is subject to change. Please check Blackboard regularly for changes or important announcements.