BIOL 4395  
Fall Semester 2023  
Topics in Biology: CNS Disorders and Diseases

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

**Class Meetings:** 4:00 PM - 5:20 PM, MW

**Classroom:** Health Science/School of NURS 211

**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:**  
Autism Spectrum Disorders  
Attention deficit hyperactivity disorder (ADHD)  
Mental retardation  
Addiction - substance use disorders (SUD)  
Alzheimer’s Disease and related dementias (ADRD)

**Text:** A general textbook – e.g Neuroscience (Purves et al., Sinauer Associates, 2017 or other Ed) or Human Anatomy & Physiology (Elaine N. Marieb & Katja Hoehn, Pearson Benjamin Cummings, 2018 or other Ed) - 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 presentation and participation 50%  
Homework  
Presentations  
Class attendance and participation  
Collaborative research project 50%  
Overarching goal of the project  
Critical review of research papers for the project  
Hypothesis and approaches  
Significance and impact

**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 one of the diseases covered in the class and how the hypothesis will be tested in an animal model or human subjects (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) as well as submitted as an essay (individual task). The essay should be minimum 5 pages containing the following:
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, or visit their office located in Union East, Room 106. For additional information, please visit the CASS website at 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

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

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>Overview of the class, Overview on the neurophysiology, neural structures, functions, and development (ref: any Neuroscience or ANP textbook)</td>
</tr>
<tr>
<td>Section 2</td>
<td>Alzheimer’s Disease (review and research articles posted in blackboard)</td>
</tr>
<tr>
<td>Section 3</td>
<td>Autism Spectrum Disorders, ADHD, and mental retardation (review and research articles posted in blackboard)</td>
</tr>
<tr>
<td>Section 4</td>
<td>Addiction – substance use disorders (review and research articles posted in blackboard)</td>
</tr>
</tbody>
</table>

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