BIOL 6343-001
MOLECULAR NEUROPATHOLOGY

(August 25, 2025 – December 9, 2025)

Fridays 1:00 – 3:45 PM, Room: SLC 2.302

Instructors: Dr. Darshan Sapkota and Dr. Uma Srikanth

Email IDs': darshan.sapkota@utdallas.edu and ukrish@utdallas.edu

Office hours:

Uma Srikanth	**Thursdays at 11 AM (FN 3.120 G)**
Darshan Sapkota	**Fridays @ 10 AM**

***Required Textbooks*:**

No required textbook for this course. All lecture power points will be posted on eLearning. If readings are required, they will be posted as well.

Recommended book: Robin's Pathology

Course Description:

This course is designed to give the students a 360° view on pathology and the corresponding molecular basis of this pathology in different diseases linked to the brain ***and spinal cord. Here students acquire an in-depth understanding of these diseased states and are able to analyze and critically review published journal articles.***

Learning Outcomes:

1. *Students will be able to associate the pathology in these diseases with the anatomy of the brain.*
2. *Students will be able to understand the role of genes and their expression in the different diseases addressed.*
3. *Students will be able to form strong connections between the pathology and the underlying molecules that may be the cause or the result of this pathology.*
4. *Students will be able to develop hypotheses to interpret experimental observations and devise experiments to test these hypotheses.*
5. *Students will analyze journal articles and the data presented using their critical thinking and knowledge they derived from the course.*
6. *Students will learn to validate hypotheses using the experimental evidence presented in peer-reviewed publications and try to propose alternate methods of study to arrive at unanswered questions.*

Assessment:

Attendance/Class participation	***10%***
Research paper presentation	***50%***
2 Quizzes	***40% (20 % from each)***

Material covered on the quizzes will be taken from the class lectures prior to the quizzes as well as any additional material that is provided. Quizzes will consist of multiple-choice questions and a few short-answer questions. The quizzes may contain bonus questions.

RESEARCH PAPER PRESENTATION:

We would like you to select a current journal article related to this field of study. This should be an original research article with molecular biology and/or pathology findings. Review articles are not acceptable. ***After you select the article, please run the paper by the instructors to get their approval****.*

We expect you to present the overall objective of the research. A brief introduction to this area of research is a good way to start the presentation. Next, explain in detail ONE key experiment in this article that helped you understand the overall objective of the paper. Please do not include materials and methods. For any further questions, please contact the instructors.

Make-up Quizzes:

These quizzes will be scheduled on a need only basis. If you are unwell and unable to attend the exam, please email the instructor at the earliest available opportunity. Also, please remember to bring a copy of the doctor's note on the day your make-up exam is scheduled. These exams will be scheduled to the convenience of the teaching assistants (graduate) or the instructor.

Quiz viewing hours:

Quizzes are graded by the instructors. Instructors will send announcements on eLearning about office hours for viewing quizzes after they have been graded.

Tentative Syllabus

DATE	*TOPICS*	*INSTRUCTOR*
8-29-25	*Neuroanatomy and Neurophysiology - Introduction*	*Sapkota*
9-05-25	*Molecular Aspects (Introduction)*	*Srikanth*
9-12-25	*Neurodegeneration in Brain – Molecular aspects Alzheimer's, CAA, Parkinson's, Huntington disease*	*Srikanth*
9-19-25	*Neurodegeneration in Brain - Pathology*	*Sapkota*
9-26-25	*Neurodegeneration in spinal cord and peripheral nerves – Molecular Aspects – ALS, Diabetic Neuropathy*	*Srikanth*
10-03-25	*Neurodegeneration in spinal cord and peripheral nerves – Pathology*	*Sapkota*
10-10-25	***QUIZ 1***	***Srikanth and Sapkota***
10-17-25	*Cerebral Vascular diseases – Molecular Aspects STROKE*	*Srikanth*
10-24-25	*Cerebral Vascular diseases – Pathology*	*Sapkota*
10-31-25	*Autosomal inheritance and infectious diseases – Molecular aspects*	*Srikanth*
11-07-25	*Autosomal inheritance and infectious diseases – Pathology*	*Sapkota*
11-14-25	*Graduate student presentation I*	*Srikanth and Sapkota*
11-21-25	*Graduate student presentation II*	*Srikanth and Sapkota*
11-24-25 to 11-30-25	*Fall break and Thanksgiving Holidays*	
TBD	***QUIZ 2***	***Srikanth and Sapkota***