Course Syllabus

Course Information

Course Title: ***NeuroAnatomy***
Catalog #: NSC-4366.001
Class Schedule: Tuesday/Thursday 2:30-3:45pm
Class Location: JO 3.516

Term: Fall 2021

Greg Dunn: Science Friday

Professor Contact Information

Ana Solodkin, Ph.D.
Office Hours: Tuesday/Thursday: 8:30:00 AM -12:00 PM (by appointment only)

Email: solodkin@UTDallas.edu

TAs Contact Information

Academics:

Jevin Kainikkara
Office Hours: Flexible, available by appointment.
Email: jkj170000@utdallas.edu
Computational:

Yile Wang
Email: Yile.Wang@UTDallas.edu
Contact: By email during quizzes/exams if there are any online technical problems

Course Pre-requisites, Co-requisites, and/or Other Restrictions

NSC 3361 and CHEM 1311 and BIOL 2311. (3-0) Y

Course Description

Human Neuroanatomy. Will focus on functional anatomy of each major brain system in relationship to the organization of their principal nuclei and tracts, in the real-world context of neurological disorders that are associated with each of these systems and their organization.
This course will introduce students to the anatomical organization and basic functional principles of the major systems that work together in the human brain: sensory, motor, cortical and modulatory. The intention is to familiarize students with the medical terminology and neurological concepts leading to a general understanding of the human brain and its functions in relation to disease and behavior. This course takes a more clinical and correlative perspective than is often found in Neuroanatomy courses.
The overall objective of the course is to impart a three-dimensional understanding of nervous system structure and organization, based upon anatomical connections, system functions, and diseases that affect the brain. Its target audience includes both students aiming for a career in health as well as those who want to focus on neuroscience or psychology research. The course will embody modern approaches to neuroanatomy and thus prepares students well for both clinical and/or scientific careers.
This course is unique and contrasts with the classic approach to Neuroanatomy by focusing on the principles of brain architecture, rather than solely on a compendium of brain structures. It is our belief that by understanding a few basic precepts of brain organization, students will have an easier time in understanding the conceptual 3D relationship between regions and systems as well as their interconnections and functions.
As this is only the second time this class is offered, some changes have been implemented: Mainly: Increased opportunity for successful scores via the addition of several practical pre-examinations (grades) that will focus on pure anatomy and very basic concepts. This will allow students sequential study steps to achieve higher comprehension of the material and hence, improved grades. In this regard, students also will be able to drop a single exam score. There also will be a Team based learning (TBL) exercise that will boost the final score.

Student Learning Objectives/Outcomes

At the end of the course, students will be able to:

- explain fundamental elements of functional neuroanatomy
- understand the topology and architecture of the central Nervous System
- identify and explain the anatomical basis of neurological deficits

---

Required Textbooks and Materials

Essential Clinical Neuroanatomy
Thomas H Champney
Wiley Blackwell, 2016
***Note**: This book is available for free rental as an eBook through the UTD library web site.*

Suggested Course Materials

Netter's Neuroscience Coloring Book
David L Felten and Mary Summo Maida
Elsevier, 2019

Web Sites

There are numerous websites with excellent graphics for visualizing human brain anatomy. Several of these are listed below.

- 2-D and 3-D Atlases from the University of Washington (virtual images, some movies): http://da.biostr.washington.edu/da.html

- The Whole Brain Atlas from Harvard University (MRI images): www.med.harvard.edu/AANLIB/home.html

- An extensive guide to Neuroscience related resources can be found at: http://www.neuroguide.com/bestbets.html

- Neurosyllabus (Basic Neuroanatomy): http://www9.biostr.washington.edu/cgi-bin/DA/PageMaster?atlas:NeuroSyllabus+ffpathIndex:Splash^Page^Syllabus+2.

- A nice, succinct summary of basic neuroscience concepts can be found at: https://www.dropbox.com/s/98scik28702lehe/NeuroReview.ppt?dl=0

Academic Calendar

Topic	Week	Date	Reading	Type of activity
		August		
Syllabus	Syllabus	24		Overview
Overview of CNS	Introduction to the NS	26	Chapter 1	Lecture
	Neurological Exam-Lesion Analysis	31		Lecture
		September		
	Medical Imaging and AI	2	Chapter 18	Lecture
	Brain Coverings	7	Chapter 2	Lecture
	Blood vessels	9	Chapter 2	Lecture
	Review	13		TA
		16		*Practical*
		21		*Partial PB Exam 1*
SC and BS	Spinal Cord 1	23	Chapter 4 & 11	Lecture
	Spinal Cord 2	28	Chapter 4 & 11	Lecture
	Brainstem 1	30	Chapters 5-7	Lecture
		October		
	Brainstem 2	5	Chapters 5-7	Lecture
	Brainstem 3	7	Chapters 5-7	Lecture
	Review	12	Review	TA
		14		*Practical*
		19		*Partial PB Exam 2*
Systems NSC	Thalamus	21	Chapter 8	Lecture
	Basal Ganglia	26	Chapter 15	Lecture
	Cerebellum	28	Chapter 10	TBL
	Sensory: Auditory/vestibular	30	Chapter 13	Lecture
		November		
	Review	2		TA
		4		*Combined Exam 3*
	Hypothalamus & reticular formation	9	Chapter 8	Lecture
	Modulatory systems	11	Chapter 16	Lecture
High Integration	Limbic system	16	Chapter 9	Lecture
	Cerebral Cortex 1	18	Chapter 17	Lecture
	Cerebral Cortex 2	30	Chapter 17	Lecture
		December		
	Review	2		TA
		7		*Combined Exam 4*

Course description

The course will be based on in person instruction for lectures and the TBL exercise.

a) *In person lectures*. Classic format pre-pandemic.
b) *Team-based learning (TBL)*. This session will take place during the second half of the course, once students are familiarized with general organizational principles. Students study the material based on a podcast (and textbook) before the session. The TBL session starts with an individual, graded, flash quiz (iRAT). This will be followed by the tRAT where students solve the same quiz in small groups. The grade for the tRAT will be shared by all members of the group. After these two quizzes, a clinical case study will illustrate the crucial application of the basic sciences to problems in clinical neurology and neuroscience research. CT or MR images of the nervous system accompany these cases. Each group of students will work together for 30 min to solve this clinical case (typically 10 questions). The questionnaire will also be graded and shared by all the members of each group.

Grading Policy

The final grade for this course is based on performance on four examinations the two practical exams, and the TBL clinical case. Because exams are cumulative, there will not be a final examination.

All examinations will include information from any and all aspects of Neuroanatomy teaching, and will be comprehensive. The course builds day by day on what has already been presented, hence the need for **comprehensive** and **cumulative** understanding, reflected in our testing policy. Questions are predominantly multiple choice or short answer; some of the multiple-choice questions will use case vignettes in the classic exam format (NOT the practical exams).

As the courses emphasizes progressive 'critical thinking' (Problem-based PB), exams will follow a slightly different format in the first and second halves of the course. The first half will include two consecutive exam sessions (30 min each). Sessions 1 and 2 will include a practical exam followed the second day with a PB exam. This will allow the students to get familiarized with the PB format. All practical and PB (problem-based) exams will be close book. The practical tests will assess basic comprehension of the material (example location and identification of brain regions) whereas the PB exams will focus on applied functions and clinical vignettes. In contrast to sessions 1 and 2, sessions 3 and 4 will combine practical and PB questions in single exam and will last 1 hr.

There will be review sessions before each exam by our TA. After the exams, students can review them with Dr Solodkin or the TA.

Grading for this course is based on both absolute expectations and comparative considerations. Performance on the four exams included in sessions 1 and 2 (aka 2 practical and 2 PB exams) count for 45% of the grade (equal weight). Performance on the two exams in sessions 3 and 4 count for 45% of the grade. The clinical TBL case will account for 10% of the grade. Any student who achieves an average score < 60% will pass (aka: Letter grade D^- or higher).

Absence on any of the exams, practical exams or TBL case will give you a "zero" score unless there is documented authorization for the absence.

Do not let the daily work slip. Both knowledge and ignorance in the course content can be cumulative. You must keep up on a daily basis, and not be tempted to slip into intermittent periods of cramming. Most students who have gotten into serious academic trouble tried to do just that, or showed up so infrequently at class as to render the course a crash course. We urge you to stay in contact with your TAs and Prof. Solodkin and bring your difficulties to their attention. We cannot be of assistance if we are unaware of the areas of difficulty.

Course & Instructor Policies

Class podcasts will be posted on *elearning* prior to each lecture. No portion of these presentations may be sold, retransmitted, reposted, duplicated or otherwise used without the express written approval of the author.

All students are expected to attend all discussion and TBL sessions, and will be responsible for any and all information presented in the podcasts and textbook material associated with each podcast.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"***As a Comet, I pledge honesty, integrity, and service in all that I do***."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.