

Introduction to Clinical Neuroanatomy
University of Florida
College of Public Health & Health Professions Syllabus
Course Number: HSC 4930, Class 21422, Section Neur (2 credits)
OTH 4418L – Lab, Class 21619 (Section LAB2), 21620 (Section LAB3) (2 credits)
Fall 2020
Delivery Format: Synchronous and Asynchronous Online
Course Website available on Canvas

Instructor Name: Jared Tanner, Ph.D.

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Office: Shands DG-86 / Zoom

Office Hours: Thursdays 1 – 3 by appointment. Other weekdays and times are also available by appointment.

Preferred Course Communications: Email or Canvas

Lecture Room: N/A

Lab Room: N/A

Prerequisites

Anatomy and physiology or instructor approval

PURPOSE AND OUTCOME

Course Overview

The purpose of this course is to provide the student with lecture and laboratory study of the human nervous system. This introductory course is designed for health science students and is focused on pertinent material including neuroanatomy, neurophysiology, and disorders of the human nervous system. Emphasis is put on the relationship between structure and function in the central nervous system with focus on higher cortical function and anatomy. A key goal of this course is to provide students with introductory knowledge for engaging in basic clinical problem-solving, by applying neurophysiological and neuroanatomical principles to case studies of neurological disorders.

Relation to Program Outcomes

This course is an elective course for BHS students. It is particularly relevant for any students planning on receiving additional health science education or attending medical school.

Course Objectives and/or Goals

The student will:

- Demonstrate knowledge and understanding of the structure and function of the human central nervous system. Course content includes – but is not limited to – anatomy, neuroscience, and cognitive science.

More specifically, based on study materials, lectures, and handouts the student will:

A. Lecture (neuroanatomy and integrating structure & function)

1. Describe basic concepts, terminology, and divisions of the central nervous system.

2. Describe the organization, structure and function of the cerebrum, diencephalon, limbic structures, basal ganglia, cerebellum, brain stem, cranial nerves, and spinal cord.
3. Define terms and describe basic cytology of the nervous system.
4. Define terms and describe conduction and transmission of nerve impulse as well as excitation and inhibition.
5. Trace and describe the flow of blood and cerebrospinal fluid of the brain and spinal cord.
6. Define terms and describe lifespan neuroanatomical development.
7. Identify structures and describe the organization and function of sensory systems including the somatosensory, vestibular, visual, and auditory systems.
8. Identify structures and describe the organization and function of the motor systems and the control of posture and movement.
9. Identify structures and describe the organization and function of the autonomic nervous system and the limbic system.
10. Integrate the information of structure and function as well as dysfunction of the central nervous system by applying knowledge of brain anatomy to functions in the various areas and lobes and infer the disorders related to various neurological features.

B. Brain (neuroanatomy) lab

1. Identify basic structure and function of the brain and spinal cord
2. Identify structures and describe their functions including: the meninges, cerebrum, diencephalon, cerebellum, brain stem & cranial nerves, and spinal cord.
3. Identify vascular and ventricular structures, trace blood and CSF flow in the brain and spinal cord.
4. Describe the etiology, symptoms, signs and treatment of major neurological diseases, disorders, and dysfunctions.
5. Relate specific functions and/or disorders to the neuroanatomical structures studied in the brain labs.
6. Compare and contrast between different lesions based on their location in the brain.

Instructional Methods

The students will participate in lecture and in laboratory study of specimen and models as well as case studies of neurological disorders. The course involves a mixture of active learning gross anatomy laboratory experience (Fall 2020 labs will be online) and lecture.

Fall 2020 online: The course will be presented synchronous and occasionally asynchronous. Any upcoming asynchronous classes will be clearly communicated during the semester. **In general, plan on attending lab and lecture during the allotted times.** The lab will consist of live demonstrations with virtual brain samples (students attending virtually) and physical brain samples. Supplemental virtual material will be used to enhance learning.

What is expected of you?

You are expected to actively engage in the course throughout the semester. You must come to class prepared by completing any out-of-class assignments. This preparation gives you the knowledge or practice needed to engage in higher levels of learning during the class sessions. If you are not prepared for the face-to-face sessions, you may struggle to keep pace with the class activities, and it is unlikely that you will reach the higher learning goals of the course. Similarly, you are expected to actively participate in the class. Your participation fosters a rich course experience for you and your peers that facilitates overall mastery of the course objectives.

DESCRIPTION OF COURSE CONTENT

Topical Outline/Course Schedule

Week	Date(s)	Topic(s)	Readings (encouraged)
1	Aug 31	Lab 1: Overview of the Brain	BCN Chapter 4 NTCC Chapter 2
	Sep 2	Neuroanatomy overview and basic definitions	
2	Sep 7	No lab – Labor Day	BCN Chapters 1 & 23 NTCC Chapter 5
	Sep 9	Brain and Environs: Cranium, Ventricles, and Meninges	
3	Sep 14	Lab 2: Meninges and Ventricles	BCN Chapter 22 NTCC Chapter 10
	Sep 16	Cerebral Hemispheres and Vascular Supply	
4	Sep 21	Lab 3: Cerebrovasculature	BCN Chapters 3 & 21 NTCC Chapter 12
	Sep 23	Online Test 1 – Coronal Brain Brainstem: Surface Anatomy and Cranial Nerves	
5	Sep 28	Lab 4: Cranial Nerves	NTCC Chapter 14
	Sep 30	Brainstem II: Internal Structures and Vascular Supply	
6	Oct 5	Lab 5: Brainstem Vasculature	BCN Chapter 9 NTCC Chapter 15
	Oct 7	Cerebellum	
7	Oct 12	Lab 6: Motor and Sensory Tracts	BCN Chapters 5 & 6 NTCC Chapter 6
	Oct 14	Corticospinal Tract and other motor pathways	
8	Oct 19	Lab 7: Review	BCN Chapter 11 NTCC Chapter 7
	Oct 21	Somatosensory Pathways	
9	Oct 26	Lab 8: Online Test 2 – Pin Test	BCN Chapter 14 NTCC Chapter 11
	Oct 28	Visual System	
10	Nov 2	Lab 9: Visual System	BCN Chapter 8 NTCC Chapter 16
	Nov 4	Basal Ganglia	
11	Nov 9	Lab 10: Basal Ganglia	
	Nov 11	No lecture – Veterans Day	
12	Nov 16	Lab 11: Limbic System	BCN Chapter 17 NTCC Chapter 18
	Nov 18	Limbic System: Emotion and Memory	
13	Nov 23	No lab – Thanksgiving	
	Nov 25	No lecture – Thanksgiving	
14	Nov 30	Lab 12: Language and Executive Function	BCN Chapter 16 NTCC Chapter 19
	Dec 2	Higher Cortical Function: Neuroanatomy of Language	
15	Dec 7	Review Lab. Lab Network Lesion Assignment Due 10:00 PM	NTCC Chapter 19
	Dec 9	Higher Cortical Function: Neuroanatomy of Executive Function	
Final	Dec 12-18	Online Cumulative Final Exam	

No lab/lecture. Note about readings: **No readings are required.** Readings will provide supporting information to what we cover in class. BCN = Basic Clinical Neuroscience. NTCC = Neuroanatomy through clinical cases.

Course Materials and Technology

There is no required textbook for this course. The following are recommended to supplement course instruction.

Recommended: Tolbert, D. L., Young, P. A., Young, P. H. (2015). *Basic Clinical Neuroscience* (3rd Edition). United Kingdom: Wolters Kluwer.

Optional: Blumenfeld, H. (2010). *Neuroanatomy through clinical cases* (2nd ed.). Sunderland, MA: Sinauer Associates, Inc. Publishers.

For technical support for this class, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

ACADEMIC REQUIREMENTS AND GRADING

Quizzes

Quizzes will be held most weeks there is a lecture. They will be taken on Canvas and available for 4.5 days after lecture. They will be 10-15 questions and be comprised of multiple choice, fill in the blank, and true/false questions. Short answers could be a possibility. You will have no more than 25 minutes to take each quiz (students who need accommodations should contact the instructor). You should not use notes, internet resources, other people, books, textbooks, or other sources during the quizzes. We will use the honor system for the quizzes, following the Honor Code: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." If you have any technical difficulties with the quizzes, please contact your instructor.

Exams

All examinations will be online through Canvas. They will use Honorlock. Please read the Honorlock preparation guide if you are not familiar with the process:

<https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Exam-Preparation-Information.pdf>

Exam 1 will be completed by the end of the day on September 23. It will consist of fill-in-the-blank. You will have no more than 30 minutes to complete the exam. Students requiring accommodations need to contact the instructor at least 1 week before the examination.

Exam 2 is the Lab Pin Test. This will be held on Monday, October 26. It will be a fill-in-the-blank test comprising up to 60 items. You will have no more than 30 minutes to complete the exam. Students requiring accommodations need to contact the instructor at least 1 week before the examination.

Final exam will be held during finals week. It will be comprehensive. The format and content will be similar to the quizzes. You will have up to 2 hours to take the exam. Students requiring accommodations need to contact the instructor at least 2 weeks before the examination.

Assignment

Lab Assignment. From a given list of regions/networks and/or disorders or dysfunctions, pick one region/network and write a 3-page paper on its general functions. Students must include a case example with a lesion to demonstrate how damage or dysfunction to the region and network affects

behavior. A rubric and more details are available on Canvas. Submission will be online through Canvas.

1. Describe major components of the system/tract/network.
2. Describe specific function(s) of the structures and network.
3. Describe deficits or disorders associated with damage or dysfunction to the system. These could be lesions (e.g., stroke, pathology).
4. If relevant, provide a brief discussion of neurotransmitters of the system.
5. Make up your own or include a case example with presentation of symptoms, location of lesion/damage.

Grading

Requirement	Due date	% of final grade
Test 1 – Coronal Brain	Sep 23	15% of final grade
Lab Pin Test	Oct 26	25% of final grade
Lab Network Lesion Assignment	Dec 7	15% of final grade
Final Exam	Dec 12 – 18	25% of final grade
Weekly quizzes (weeks 2-16)	Dec 9	20% of final grade

Point system used

Points earned	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	Below 60
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

Please be aware that the Bachelor of Health Science and Bachelor of Public Health Programs do not use C- grades.

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Exam Policy

Policy Related to Make up Exams or Other Work

Make-up exams or quizzes will be available with pre-arrangement or verification of illness from a physician.

Please note: Any requests for make-ups due to technical issues MUST be accompanied by the UF Computing help desk (<http://helpdesk.ufl.edu/>) correspondence. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance

You are expected to attend lecture and lab. Attendance will not be taken or graded but you will be at a **significant disadvantage** if you do not attend lecture and lab. This class follows the UF policy for excused absences. For information regarding the UF Attendance Policy see the Registrar website for additional details: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior and Communication

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. You are expected to interact respectfully and courteously with other students and the instructor. Course communication should be civilized and respectful to everyone. The means of communication provided to you through eLearning (e-mail, discussion posts, course questions, and chats) are at your full disposal to use in a respectful manner.

Abuse of this system and its tools through disruptive conduct, harassment, or overall disruption of course activity will not be tolerated. Conduct that is deemed to be in violation with University rules and regulations or the Code of Student Conduct will result in a report to the dean of students.

Refer to the [Netiquette Guide for Online Courses](#) for more information.

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Online Faculty Course Evaluation Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at

<https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Policy Related to Guests Attending Class:

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are not permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy:

<http://facstaff.php.ufl.edu/services/resourceguide/getstarted.htm>

SUPPORT SERVICES

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, it is strongly recommended you register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class or as soon as you believe you might be eligible for accommodations. The Dean of Students Office will provide documentation of accommodations to you, which you must then give to me as the instructor of the course to receive accommodations. Please do this as soon as possible after you receive the letter. Students with disabilities should follow this procedure as early as possible in the semester. The College is committed to providing reasonable accommodations to assist students in their coursework.

Students in UF Health Sciences programs should be mindful that unique course accommodations may not be applicable in a clinical, fieldwork or practicum setting. Thus, planning a semester in

advance with the DRC Health Sciences Learning Specialist, Lisa Diekow ldiekow@ufsa.ufl.edu , is highly encouraged.

Counseling and Student Health

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. Online and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>

Crisis intervention is always available 24/7 from:

Alachua County Crisis Center:

(352) 264-6789

<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

Inclusive Learning Environment

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace The University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." If you have questions or concerns about your

rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: www.multicultural.ufl.edu

Disclaimer

This syllabus represents current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.

Last update: September 2, 2020