



CSD 6120 - Neurology of Speech-Language and Hearing

Harding University

College of Allied Health

3 Credit Hours

Class Meetings Times –Fridays 12:00 – 4:00 – some exceptions noted on syllabus

Swaid 215

Semester/Term: Fall 2023

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Course Information

Course Communication Protocols

We plan to utilize Canvas Announcements as our primary means of communication with you as a group. We may also send emails to your Harding email account on occasion, especially for individual communication. We would prefer that you use our Harding emails and you can expect a reply from us within 24 hours during the week. Please don't expect emails to be answered during the weekend. Students are expected to check emails daily and a timely response from you is appreciated. We will use Google Meets as well as in-person meetings for office hours and are happy to schedule times to meet with you individually or in small groups to discuss any course concept, assignment, quiz or review an exam.

Classroom etiquette

As servants of Christ, we must know how to address each other via all methods of communication - whether online or on-ground. When it comes to our communication, let's remember the following: Harding University is a Christian university and expectations are that the relationship and communication style between one another should reflect Harding's Christian mission.

When communicating with teachers or classmates, please remain professional and courteous. Generally, we use person-first language (child with Down syndrome) rather than disability-first language (Down syndrome child); however some individuals prefer disability-first language (Deaf person, autistic child).

Classroom Code of Conduct

Please abide by the following rules to allow for the best learning environment for you and your fellow classmates. These rules contribute to an impression of professionalism, something that should be very important to you as you prepare for a professional career.

1. Cell phone policy: Turn off your cell phones (any exceptions must be discussed with the instructor). No text messaging allowed, no matter how quiet yours may be. No cell phones or electronic devices during quizzes and exams or you will earn a “0” on your quiz or exam. Do not use cell phone as a watch. **Turn it off and put it away.**
2. No lap-top usage for surfing the web. No instant-messaging in class time.
3. Come to class on time to minimize distractions and be considerate of the rest of the class. Remain until the class is dismissed.
4. Attend **ALL** classes. If you need to miss a class period, please inform us via email prior to the class period. Any work due remains due on that day so, if you are absent, submit assignments early or send them with a classmate.

University Mission Statement

Harding's [mission](#) is to provide a quality education that will lead to an understanding and philosophy of life consistent with Christian ideals. This involves the following goals:

1. **Generally, the integration of faith, learning and living** - developing the whole person through a commitment to Christ and to the Bible as the Word of God, an emphasis on lifelong intellectual growth, and the encouragement of Christian service and world missions through a servant-leadership lifestyle.
2. **Specifically, the development of Christian scholarship** - while acknowledging dependence on God, stressing Christian commitment to intellectual excellence through a strong liberal arts foundation and effective professional preparation.
3. **The promotion of Christian ethics** - creating an atmosphere that emphasizes integrity and purity of thought and action.
4. **The development of lasting relationships** - fostering personal and social relationships through interaction among faculty, staff and students; and stressing a lifelong commitment to marriage and the Christian family.
5. **The promotion of wellness** - emphasizing that the body is the temple of the Holy Spirit and that lifetime health habits contribute to a better quality of life.
6. **The promotion of citizenship within a global perspective** - developing a Christian understanding of and respect for other cultures through an emphasis on liberty and justice.

Department Mission Statement

Our program excels in developing highly-skilled and professional graduates who are ready to impact their local and global communities by improving the lives of those they serve. Christian faculty and staff are invested in providing an unparalleled experience utilizing a comprehensive curriculum, contemporary technology, and state-of-the-art facilities to engage students in reaching their full potential, both educationally and spiritually. As a result, our students exemplify ethical leadership, critical thinking, and interprofessional collaboration to support top of the license practice.

Catalog Description

Neuroanatomy and neurophysiology with a concentration on neurological mechanisms related to speech, language and hearing.

Integration of Faith and Learning Statement

As your instructors, we hope that you see your practice as rehabilitation professionals as a vehicle of service to God's children. In this course, we aim to equip you well to serve His creation in the pursuit of wellness.

Prerequisites: none

Course Rationale

This course is designed to provide the graduate student in communication sciences and disorders with a functional knowledge of the neurological anatomy and physiology underlying speech, swallowing, cognition and language. Special attention is given to critical thinking and concept synthesis. Utilizing material presented in this course, the successful student will be able to determine most likely sites of lesion, diagnoses, clinical presentations and evidence-based treatment approaches. Oral and written communication skills will be assessed via presentations and case studies.

Course Materials

Seikel, J.A., Konstantopoulos K., Drumright D.G. (2020) Neuroanatomy & Neurophysiology for Speech and Hearing Sciences. Plural Publishing. ISBN: 9781635500714

McFarland, D. (2023). Netter's Atlas of Anatomy for Speech, Swallowing and Hearing. (4th Ed). Mosby/Elsevier Press. ISBN 978-0323830348

Textbook Rationale

We know that textbooks represent a significant cost for the college student. In this course, you will utilize the required text heavily and it is an excellent resource for you as you enter professional practice. Subsequent coursework will build on concepts mastered in this course and these materials will continue to be beneficial in your studies.

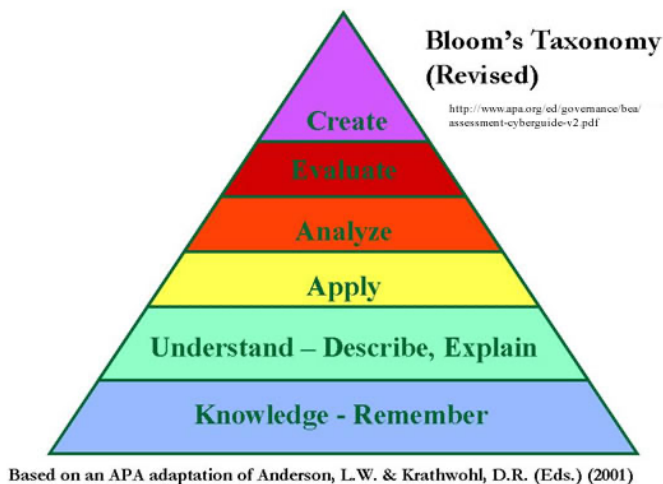
Your book is available without cost from the Brackett Library. A link to the online version of your text is available on the Canvas course. The bookstore will not have physical copies of the text but can order for you. You can purchase the book directly from the publisher (they usually send me a coupon code to distribute to you) or from Amazon.

Learning Objectives

Development of critical thinking skills is a primary objective of this course. Critical thinking (Bhatnagar, 2013) includes:

- The ability to discriminate essential from trivial information
- Successful consolidation of information in memory and the ability to easily retrieve it
- The ability to apply knowledge
- The ability to present facts from different angles

- The skill to seek information for a full understanding of a case, to explore alternatives and seek explanations



This graduate course is designed primarily to build a foundation of knowledge upon which you will build in subsequent courses. We will focus our efforts in the bottom three tiers of the Bloom's Taxonomy framework. We will learn many facts and build a robust library of knowledge. We strive to fully understand the material presented, able to describe neuroanatomy and explain the effects of neurogenic diseases/disorders on the functions of speech, language, cognition and swallowing. We will apply what we have learned to understand dysfunction and the relationships between neuroanatomy, neurophysiology and observable functions. A strong foundation in this course will prepare you for success in future semesters and in your career as a speech-language pathologist. Investments made here will be rewarded down the road, we promise.

Course Learning Objectives (CLOs)

Upon the completion of this course, students will be able to:

1. Describe the organization of the human nervous system, including major structures of the CNS, PNS, spinal cord, brainstem, and cerebellum
2. Understand concepts of Broadmann mapping, localization of function, homunculus and how these apply to the human nervous system
3. Discuss the structure and functional role of the neuron (including different types) as well as support cells such as glial cells, ependymal cells, astrocytes, etc.
4. Explain neural firing (action potential), the role of neurotransmitters, and the structure/function of the synapse
5. Discuss the components of the reflex arc, including various types of sensors
6. Describe dermatomes, myotomes, nerve plexus, special/general senses and major elements of visual, gustatory, auditory and vestibular systems
7. Describe hemispheres, lobes, gyri, and sulci associated with a variety of language and cognitive functions
8. Identify major cortical and subcortical landmarks of the cerebral cortex (meninges, ventricles, specific gyri/sulci, thalamus, basal ganglia, etc.) understand their role in the nervous system, and describe expected clinical outcomes when these structures are lesioned
9. Visually identify and explain the importance of the three levels of the brainstem, their prominent landmarks (superficial and deep) and the functional significance of each.

10. Understand and describe functional classifications of the nervous system in terms of afferent/efferent, pyramidal/extrapyramidal, sympathetic/autonomic, UMN/LMN, etc.
11. Visually identify and explain the function of each of the cranial nerves. Discuss expected outcomes when each CN is lesioned.
12. Discuss each of the cranial nerves in terms of classification (motor/sensory/mixed, general/special, somatic/visceral, etc.)
13. Discuss the primary role of the cerebellum, major structures, and associated peduncles. Explain the tracts in each peduncle and the types of information being carried within each.
14. Describe the cellular structure of the cerebellum and basic roles of each cell type within this structure
15. Describe the descending and ascending motor and sensory pathways within the brain/cerebellum, spinal cord and brainstem
16. Discuss important structures visible in longitudinal and transverse anatomy of the spinal cord. Identify and discuss the roles of key tracts (ascending and descending)
17. Differentiate between and describe the route of the corticobulbar and corticospinal tracts. Explain the types of information carried on each and expected clinical signs resulting from various sites of lesion along these pathways.
18. Differentiate between and discuss the relative importance of the pyramidal and extrapyramidal systems and the expected clinical signs resulting from various sites of lesion within these systems.
19. Broadly describe clinical signs resulting from spinal cord damage at varying levels
20. Explain and discuss the importance of central pattern generators to the SLP. Differentiate CPGs and reflexes and discuss how they are related.
21. Describe the blood flow to and from the brain, including the Circle of Willis and the cerebral arteries. Identify the two major vascular distributions. Discuss the potential effects of loss of supply to any of the major branches of the vertebrobasilar or carotid supplies.
22. Discuss feedback and feed-forward processes and their role in learning and execution of speech
23. Discuss neurophysiological foundations of each stage of swallowing and the role of sensory input to the swallowing process.
24. Describe oral, pharyngeal and respiratory reflexes and their relevance to the SLP
25. Explain some of the most common neuropathologies (i.e. stroke, traumatic brain injury, dementia, Parkinson disease etc.) including etiology, neuroanatomical impact, pathology and/or pathophysiology, typical presentation, common test findings, progression, prognosis, SLP role in patient care and associated interprofessional team involvement in patient care
26. Use all forms of expressive communication with all stakeholders to assure highest quality care
27. Critically evaluate information related to diagnoses and case studies, use valid evidence in decision-making, apply current knowledge and sound judgment and access sources of information to support clinical decisions.
28. When presented with a case scenario, students will anticipate likely location of lesion or provide expected clinical signs and symptoms associated with that lesion
29. Understand role of interprofessional assessment and intervention for individuals with neurogenic disorders and be able to coordinate care with other disciplines and community resources

Grading and Assignment Details

Grading Information

You will be given feedback during the duration of this course. Feedback will primarily be in the form of grades on quizzes, exams and projects. The intent of this feedback is to inform you of how well you met the expectations for these components and help you identify strategies for mastering the course material.

Assessment of the knowledge, skills, and proficiency of each student for the purpose of assigning a letter grade at the completion of this course will be based on the following course components:

Final grades will be determined as follows:

- A - 90 – 100%
- B- 80 – 89%
- C - 70 – 79%
- D - 60 - 69%
- F - below 60%

**** Must average 70% on all exams (including the final) to earn course credit**

Course components are weighted as follows:

- Case Studies – 7%
- Presentations – 5%
- Quizzes – 8%
- Exams – 80% (Each of 3 exams and a final are worth 20% of your grade)

Students are strongly encouraged to attend scheduled Exam Review sessions to review test performance, identify needed adjustments in test-preparation strategy, and clarify any gaps in knowledge. Appointments may also be made (and are encouraged) to answer any questions the student may have regarding course content or difficult concepts. Students are expected to take ownership of and responsibility for their course grades and are strongly encouraged to use the abundant resources available with the course text and make use of the instructors' office hours to ask any questions that remain unanswered. **If a student does not earn an average of 70% across all major course exams (without rounding), a grade of D will be recorded for the course, regardless of the average on other class assignments.**

If a student is not achieving course learning objectives, not demonstrating essential skills, professional practice competencies, or meeting CFCC standards as determined by the course instructor the student will be notified. The student, instructor, clinical educator, and/or clinical director (as appropriate) will meet to develop a written individualized remediation plan that supports student progress toward achieving the needed outcomes. The remediation plan will include identified weaknesses supported by evidence (ie, exam results, presentation, clinical performance, quiz grades, etc.). In addition, the remediation plan will include specific tasks, outcomes, and a timeline for completion.

The written plan will be shared with the student's graduate advisor and department chair. A copy of the plan will be placed in the student's Calipso account and the course will be marked as "in remediation" on their KASA. Upon successful completion of the remediation plan the instructor, student, and advisor will sign the form acknowledging the completion of the remediation plan and then digitally file the form in the student's KASA in Calipso. The course and associated learning objectives can then be marked as completed. If the remediation of skills is not completed successfully, the student will repeat the course. If the remediation is ongoing at the end of the semester, the student will receive a grade of Incomplete for the course.

Grades are not gifts; they are earned. The instructor does not *GIVE* grades; rather the student *EARN*S the grade through organization, diligence, planning, and execution. Students are expected to assume individual responsibility for the quality, presentation and timeliness of their own work.

Late work is not accepted and earns a grade of zero.

Course Requirements:

1. This course includes laboratory activities associated with the cadaver lab, plastic models and basic screening techniques.
2. Four examinations will be administered. The format of each exam will be largely multiple choice, including identification of key structures. After the first unit examination, all additional examinations will contain comprehensive material from previous units to ensure a full foundational understanding of material. Each new unit examination after the first examination will contain ~10% review material. The final will be comprehensive in nature
3. Student Presentations and developed handouts will be done throughout the semester covering common pathologies associated primarily with central nervous system pathology. Requirements of this project will be posted online along with a rubric that will be followed for assessment.
4. Quizzes will be administered at the beginning of each class period. Targeted learning objectives will be posted for these quizzes each week. An absence for a quiz, unless a doctor's note or excuse is provided in writing, will be worth a grade of "0."
5. Each student will participate in the learning/teaching and practical quiz in the donor lab. The instructors reserve the right to modify these activities as needed. Activities may include observation, dissection, identification, examination/screening, and teaching students from one or more other healthcare disciplines.
6. Each group will be assigned Case Study/Journal Club questions from two book chapters. Each group will have 2 of these to complete over the course of the semester. These clinical cases help students apply the material learned in class to clinically-relevant scenarios. Project guidelines are posted to Canvas.

Participation/Attendance

Full participation in each class meeting is required for the success of the entire class. True exchange of academic ideas can only be achieved with everyone actively participating.

Attendance at each class meeting is expected. Come to class having read the material, viewed the accompanying Echo Lectures and have your questions ready. Material in this course often involves complex concepts and large amounts of material that is probably new to you. We truly want you to be successful in mastering this course material but cannot answer questions that you don't ask. In our classroom, there are no "dumb" questions. We will always respect your willingness to seek a greater depth of knowledge and promise to never knowingly make a student feel "silly" for asking a question in class – it's a safe place to pursue knowledge. Please make sure that you maintain that sense of safety by honoring your classmates' pursuit of knowledge.

If you need to miss a class period, please inform the course coordinator (Dr. Meeker) via email prior to the class period.

Attendance Policy: [Harding University Attendance Policy](#)

Submitting Assignments

Please use Canvas for submitting assignments; each assignment has a correlating spot for submission.

Policies and Procedures

Drop and Add Dates

Please refer to the University's [policy regarding drop/add](#) if you have specific questions.

University Assessment

Harding University, since its charter in 1924, has been strongly committed to providing the best resources and environment for the teaching-learning process. The board, administration, faculty, and staff are wholeheartedly committed to full compliance with all Criteria of Accreditation of the Higher Learning Commission as well as standards of many discipline-specific specialty accrediting agencies. The university values continuous, rigorous assessment at every level for its potential to improve student learning and achievement and for its centrality in fulfilling the stated mission of Harding. Thus, a comprehensive assessment program has been developed that includes both the academic units and the administrative and educational support units. Course-specific student learning outcomes contribute to student achievement of program-specific learning outcomes that support student achievement of holistic university learning outcomes. All academic units design annual assessment plans centered on measuring student achievement of program learning outcomes used to sequentially improve teaching and learning processes. Additionally, a holistic assessment of student achievement of university learning outcomes is coordinated by the university Director of Assessment used to spur continuous improvement of teaching and learning.

Students with Disabilities Accommodations

It is the policy for Harding University to accommodate students with disabilities, pursuant to federal and state law. Therefore, any student with a *documented disability* condition (e.g. physical, learning, or psychological) who needs to arrange reasonable accommodations must contact the instructor and the Office of Disability Services and Educational Access at the *beginning* of each semester. If the diagnosis of the disability occurs during the academic year, the student must self-identify with the Office of Disability Services and Educational Access *as*

soon as possible in order to get academic accommodations in place for the remainder of the semester. The Office of Disability Services and Educational Access is located in Room 226 in the Student Center, telephone, (501) 279-4019.

Code of Academic Conduct

Students of Harding University are expected to be honorable and to observe standards of academic conduct appropriate to a community of Christian scholars. Harding University expects from its students a higher standard of conduct than the minimum required to avoid discipline. Harding expects its students to conduct themselves as responsible citizens in a Christian community. Enrollment at the University is viewed as a privilege that brings the attendant responsibilities and accountability. In order to encourage Christian living and growth, the University administers a student Code of Conduct. This code is provided to every student upon enrollment. Upon registration to the University, students acknowledge and agree to abide by this code. Harding University reserves the right to refuse admission or dismiss students whose lifestyle is not consistent with the Christian principles for which Harding stands; and when the general welfare of the institution requires such action. Students suspended for disciplinary reasons during a semester may receive a grade of “F” in all courses for that semester. Please visit the graduate/professional Harding University Student Handbook for further details.

Academic Integrity Policy

Honesty and integrity are characteristics that should describe each one of us as servants of Jesus Christ. As your instructor, I pledge that I will strive for honesty and integrity in how I handle the content of this course and in how I interact with each of you. I ask that you join me in pledging to do the same.

Academic dishonesty will result in penalties up to and including dismissal from the class with a failing grade and will be reported to the Director of Academic Affairs. All instances of dishonesty will be handled according to the procedures delineated in the [Harding University catalog](#).

Some elements of this course are designed to be completed with a peer (case studies and presentations). Refrain from discussing exam content with any classmates, including students who have taken this course previously.

Referencing Information

As the accepted writing style of business, psychology, education, and social science programs across the globe, the American Psychological Association publication format (otherwise known as APA Style) is the required writing style for this course. Learning to conduct scholarly research is a natural part of academic work, and will help you succeed at Harding University. Conducting scholarly, professional and industry research is required for this course.

If a source is questionable, e.g., Wikipedia, other wikis, ask.com, answers.yahoo.com, etc., please contact your professor for clarity and permission before using a source that falls outside the scope of traditional academic standards. It is also important that you show how these references assisted your academic work; make sure you reference your sources in every assignment you submit, no matter how mundane the assignment may be. Failure to properly and completely cite your sources may constitute plagiarism or cheating, as delineated in the Academic Code of Conduct. Bottom line, remember these two simple rules: 1) give credit where

credit is due, and 2) if it isn't your words, ideas or thoughts, it is someone else's and needs to be cited.

- [APA Resources](#)
- [Purdue Online Writing Lab](#)

The Harding University Writing Center is also available to provide help with planning, writing, organizing, or revising an essay as well as with using MLA, Chicago, or APA formats. You can schedule an appointment with the Writing Center at harding.mywconline.com or ask questions via email at HardingUniversityWritingCenter@gmail.com.

Turnitin

During this course, the originality of various assignments submitted by students will be checked via [Turnitin](#), an organization leading the way in both plagiarism detection and student learning. Turnitin provides institutions, faculty, and students with a variety of academic tools, including originality checks, online grading capabilities, and even peer reviewed feedback. Turnitin is integrated with the assignment settings used by the instructor when preparing assignments in Canvas.

Student Declaration

Submitting an electronic document at Harding University constitutes an agreement with the following declaration:

- I affirm that the work submitted is of my own accord, is original, and contains the necessary and appropriate citations, where the work is of another source.
- I affirm that this assignment has not previously been submitted in any form.
- When submitting assignments to Turnitin, I acknowledge and adhere to its disclaimer statements.
- To uphold Harding University's [Academic Integrity Covenant](#)

Academic Grievance Policy

If a student believes that he or she has reason to question the decision of a faculty member with regard to the final grade received in a course or the denial of academic progression, a procedure has been established to resolve the grievance.

The student must initiate the written Academic Grievance Appeal within five business days after notification of the final grade in Pipeline or notification of denial of academic progression. In cases of both course grade and academic progression appeals, students are encouraged to first engage the involved faculty member in a good faith discussion (in person or via telephone or email) as the first step in resolving any concerns. If resolution is not achieved, a student may submit a written academic grievance by following the [policy set forth in the Harding University catalog](#). All students should be familiar with this policy.

Time Management Expectations

For every course credit hour, the typical student should expect to spend at least forty-five clock hours of concentrated attention on course-related work, including but not limited to time attending class, as well as out-of-class time spent reading, reviewing, organizing notes, preparing for upcoming quizzes/exams, problem solving, developing and completing projects, and other

activities that enhance learning. Thus, for this three-hour course, a typical student should expect to spend at least **135 hours of focused time** dedicated to the course.

Dress Code

All members of the Harding community are expected to maintain standards of modesty and decency in dress appropriate to the Christian lifestyle and consistent with professional employment expectations. For these reasons, students are expected to adhere to an established [dress code](#), whether online or in person. Students coming to class out of dress code will be asked to leave and an unexcused absence will be recorded. Additional standards of dress may be required by professional and clinical environments. Please check the CSD Student Handbook and CSD Clinic Handbook for additional information.

Course Policies

Course Academic Conduct

All acts of dishonesty in any academic work constitute academic misconduct. As a student of Harding University, you should avoid all cases that will be construed as academic misconduct. Please see the [University Catalog](#) with any question about what constitutes academic misconduct.

Testing Issues

All examinations in this class will be taken using the ExamSoft platform. Please see the department's policies and helpful hints for smooth test-taking.

Inclement Weather If inclement weather prohibits your participation in any element of this course, prompt communication with me is expected. Your personal safety is our primary concern. We will handle any instances that arise on a case by case basis.

Academic Support Services

Harding offers a wide variety of academic support services. While this list is not all-inclusive, the following links may be useful to students (some services may not be applicable for graduate or professional students):

- [Library](#)
- [Testing](#)
- [Tutoring](#)
- [Writing Center](#)

Student Support Services

Harding offers a wide variety of student support services. While this list is not all-inclusive, the following links may be useful to students (some services may not be applicable for graduate or professional students):

- [Advising](#)
- [Registration](#)
- [Financial Aid](#)
- [Student Life](#)
- [Counseling](#)
- [Career Services](#)

Additional Information

This course is additive in nature meaning that your understanding of future concepts is built upon understanding of earlier concepts. If you fall behind, catch up! If you're lost, ask yourself if you

are dedicating enough focused time to the material. If you are reading your textbook, spending adequate time with the material (according to the time expectations), have ensured that your study time is focused and not distracted, and are still lost, see me (earlier rather than later). We want to help you be successful in this class.

In this course, spelling counts. Take the time to learn the correct spelling of each term – if it's spelled wrong, it will be counted wrong. Basic anatomical terms and names of structures do not require capitalization (e.g. esophagus, neurons, larynx, palatoglossus). Structures/diseases named for people (e.g. Broca's area, Parkinson disease, Alzheimer's disease, circle of Willis) are capitalized.

We are firm believers that excellent treatment is built on a solid diagnostic foundation which is built on a clear understanding of what's "normal." You can't reasonably expect to improve your patient's function if you can't identify the problem. Please view this course as foundational (not optional) for your skills as a diagnostician and clinician.

Changes to Syllabus Notice

The instructors reserve the right to modify and update any part of the syllabus where necessary. You can expect that these changes will be for your perceived benefit and will be communicated in Canvas. It is your responsibility to stay up to date with any changes communicated by the professor.

Week	Date and Time	Content	Lecturer	Chapter
1	August 25	Introduction to Neurology of Speech-Language and Hearing Course and Expectations Neurons and Glial Cells	Killins & Meeker Group 1 – Case study or you can wait and do Chapter 11 (can turn in next week)	1, 2
2	September 1	Basic Reflex and Sensory Function Presentations: myasthenia gravis & cerebral palsy	Killins Group 2 and 3 – Case Study	3
3	September 8	Cerebral Cortex	Meeker Group 4 – Case Study Case 4-3 is an "exemplar" – See Canvas	4
Week 4 – September 15 Exam #1 Chapters 1-3				
5	September 22	Anatomy of the Subcortex Presentations: Parkinson disease and Huntington disease	Killins Group 5 – Case Study	5
6	September 29	Anatomy of the Brainstem	Meeker Group 1 – Case Study	6

		Presentations: Chiari malformation and glioblastoma		
9	October 13	The Cranial Nerves Presentations: Bell's palsy and Guillian-Barre Cranial Nerve Testing Lab	Killins & Meeker Group 2 – Case Study	7
Exam #2 Chapters 4-7; October 20				
10	November 3	Cerebellar Anatomy and Physiology Presentations: MS and ALS	Killins – Class meets in the morning on this day Group 3 – Case Study	8
11	November 10	Spinal Cord In-class lab over structures to be seen in Donor lab Presentations: cervical spine injury/surgery and muscular dystrophy Neurological Screening Lab	Killins Group 4 – Case Study	9
12	November 17	Cerebrovascular Supply Possible lab day (brain dissection) Presentation: cerebral aneurysm	Killins & Meeker Group 5 – Case Study November 15 8-10 - LAB	10
Nov 24 Thanksgiving Break				
December 1 - Exam #3 Chapters 8-10				
14	December 4	Neural Control of Speech and Swallowing This material will be tested on the comprehensive final exam	Meeker Group 1 – Case Study (optional)	11
15	December 8 and possible additional date TBA	Lab Days See above - lab day November 15 (with PA students)	Killins & Meeker	

We will have a traditional final exam and a practical exam during finals week