

Course Syllabus

Course Information

Course Number/Section	SPAU/NSC 3345/001
Course Title	Neural Basis of Communication
Term	Spring 2018
Days and Times	Tues/Thurs, 1:00–2:15 pm
Room	Founders North (FN) 2.102

Professor Contact Information

Professor	Diane Garst Walsh, M.S., CCC-SLP
Email Address	diane.walsh@utdallas.edu
Office Location	Callier Richardson Addition, room 12.119S (2 nd floor - enter in the glass door marked Communication Disorders and follow the hallway to my office)
Office Phone	(972) 883-3610
Office Hours	Mondays 12-1pm (<i>I'm coming from off-campus so please hold on if I'm running late!</i>) Additionally, you're welcome to make an appointment to meet outside scheduled office hours using the link: http://walshdg.youcanbook.me All appointments will take place at the office listed above, unless otherwise discussed.

Teaching Assistant Contact Information

TA	Sishi (Cecilia) Pak, MS
Email Address	Cecilia.liu@utdallas.edu
Office Hours	Thursday 2:30pm-3:30pm and by appointment
Office Location	Callier Richardson Addition, CRA 12.119D Desk F
Teaching Intern	Swarna Radhakrishnan Sxr152730@utdallas.edu
Office Hours	Email for appointment

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

None

Course Description

The purpose of the course is to provide an introduction to the structure and function of the human brain and nervous system as related to communication disorders and the fields of speech-language pathology and audiology. The course will examine the neurology of consciousness, speech, language, swallowing, cognition, and emotion. Various pathologies of the nervous system will be surveyed as they relate to neurogenic communication disorders. Multiple modalities will be utilized to enhance learning opportunities including lecture, illustrations, writing assignments, case studies, and video clips.

This course has been designed to ensure that students demonstrate required knowledge and skills as outlined in the Standards and Implementation Guidelines for the Certificate of Clinical Competence in Speech-Language Pathology/Audiology. The specific standards addressed in this class are: IV-B, IV-C, IV-D, IV-E, IV-G

Student Learning Objectives/Outcomes

1. Identify the major landmarks of the central and peripheral nervous system as they related to normal and abnormal communication (Standard IV-B, IV-C, IV-D)
2. Describe the neuromuscular control for normal speech and gestural production (Standard IV-B, IV-C)
3. Demonstrate knowledge of the central nervous system as it related to normal cognition, language production and comprehension (Standard IV-B, IV-C, IV-D)
4. Describe the central and peripheral nervous systems as they relate to movement, sensation, and vision (Standard IV-B)
5. Explain developmental and acquired neurological changes associated with communication and hearing disorders (Standard IV-C, IV-D)
6. Recognize ethical issues that impact assessment and treatment of adults with communication disorders (Standard IV-E, IV-G)

Required Textbook

1. Rouse, M. (2015). *Neuroanatomy for speech-language pathology and audiology*. Burlington, MA: Jones & Bartlett Learning. ISBN: 978-1-284-02306-0
Alternative access: eBook access is available for 1 year at <http://www.jblearning.com/catalog/9781449694449/>

Additional selected illustrations and outlines will be posted on eLearning for use during lecture. It's recommended to regular check and print material in advance.

Optional resource

Brain anatomy coloring book

Lecture Topic/Reading Schedule

(These descriptions, timelines, and course policies are **subject to change at the discretion of the instructor**. It is the students' responsibility to obtain lecture information if they should miss a class.)

Dates	Tuesday	Thursday	Assignments
Week 1 Jan 9 and 11	Intro and Overview, Organizational Approaches p. 4-8	History of Neuroscience, Navigation, Imaging, p. 8-14, p. 25-30 and 36-44	Quiz 1 on eLearning Due Tuesday, Jan 16 th at 12noon
Week 2 Jan 16 and 18	Nervous System development p 44-49	Cells of the nervous system and disorders of nervous system cells p. 56-60 and 64-69	Quiz 2 on eLearning Due Tuesday, Jan 23 rd at 12noon
Week 3 Jan 23 and 25	Neuron firing and Neurotransmitters p 61-64	Finish Neuron Firing and Review	Quiz 3 on eLearning Due Tuesday, Jan 30 th at 12noon
Week 4 Jan 30 and Feb 1	Exam 1	Spinal cord organization and function, Disorders of the spinal cord p. 74-78	Quiz 4 on eLearning Due Tuesday, Feb 6 th at 12noon

Week 5 Feb 6 and 8	Brainstem organization and cerebellum p. 78-80 and 88-90	Cranial nerves p. 80-88	Quiz 5 on eLearning Due Tuesday, Feb 13th at 12noon
Week 6 Feb 13 and 15	Continued	Diencephalon and basal ganglia P 96-102	Quiz 6 on eLearning Due Tuesday, Feb 20th at 12noon
Week 7 Feb 20 and 22	Disorders of the diencephalon	Disorders of the basal ganglia p. 102-103	Quiz 7 on eLearning Due Tuesday, Feb 27th at 12noon
Week 8 Feb 27 and Mar 1	Exam 2	Brain protection, nourishment and blood supply P 103-113	Quiz 8 on eLearning Due Tuesday, Mar 6th at 12noon
Week 9 Mar 6 and 8	Disorders in brain vascularization p. 117-120	Cerebrum organization, landmarks, plasticity p. 114-117, 120	Quiz 9 on eLearning Due Tuesday, Mar 20th at 12noon
Week 10 Mar 13 and 15	Spring break!		

Week 11 Mar 20 and 22	Regions of the cerebral cortex p. 126-133	Consciousness and disorders of consciousness p. 139-151	Quiz 10 on eLearning Due Tuesday, Mar 27th at 12noon
Week 12 Mar 27 and 29	Neurology of Hearing and Balance p. 156-167	Neurology of speech p. 172-181	Quiz 11 on eLearning Due Tuesday, Apr 3rd at 12noon
Week 13 April 3 and 5	continued	Exam 3	
Week 14 April 10 and 12	Neurology of language, visual processing p. 186-192 Online Lecture Material To Be Announced	Disorders of language (guest speaker panel from Brain Injury Network of Dallas) p 192-195	Quiz 12 on eLearning Due Tuesday, April 17th at 12noon
Week 15 April 17 and 19	Neurology of the swallow p. 200-204	Neurological swallowing disorders (guest: Diane Longnecker, MS CCC-SLP) p. 204-207	Quiz 13 on eLearning Due Tuesday, April 24th at 12noon
Week 16 April 24 and 26	Neurology of Cognition p. 212-218	Putting it all together Bedside Neuro Screen (guest: Joseph Vera, CCC-SLP)	

Final Exam tentatively scheduled for Thursday, May 3rd 2pm*-4:45pm

***note the time**

Course Components

Acquired knowledge will be assessed via a series of online quizzes, illustration assignments and four exams that will cover information presented in lectures, readings and videos.

Weekly Quizzes

Objective quizzes will be posted on eLearning weekly by Friday at 10am and will be due the following Tuesday at 12noon (unless otherwise posted in the syllabus or announced). Each quiz will be worth 5 points and include 5-10 questions related to material from lecture or the assigned readings. The lowest quiz grade will be dropped in calculating the course grade. No late submissions will be accepted.

Illustration Assignments

Illustration assignments are designed to engage the student in anatomical structures of the brain and related course material outside of the lecture environment.

The course is divided into 4 unit sections. A template for the assigned illustrations will be posted in a document on eLearning at the start of each unit. Completed illustrations are to be stapled and will be due at the start of the Exam for the unit. Include references for EACH illustration (including the textbook) in an APA style in the provided space.

If a student missed the exam time to turn-in the illustrations, he/she can turn in the completed collection under my office door (CRA 12.119S) by the end of the day (Building is locked at 9pm). Points will be deducted for late work turned in after the end of the due date. Illustrations will be scored for completeness and accuracy of each illustration.

<u>Due Date</u>	<u>Week</u>	<u>Description</u>
<u>Unit 1: Jan 30</u>	Wk 1	Sketch a person and include a simple picture of the brain, spinal cord, and nerves (Ref Fig 1-1)
	Wk 2	Draw a sagittal view of the brain (See 3-9) and label: cerebral hemisphere, diencephalon, cerebellum, brainstem
		Sketch a flow chart of the development of the Central Nervous system. Include the prosencephalon, mesencephalon, rhomencephalon and the structures they develop into (telecephalon, diencephalon, myelencephalon, and metencephalon)
	Wk 3	Draw a neuron (See Fig 4-4) and label the dendrites, cell body, axon, myelin sheaths, Nodes of Ranvier and axon terminals
<u>Unit 2: Feb 27</u>	Wk 4	Sketch a cross-section of the spinal cord along with its spinal nerve (See Fig 5-2). Label: Central canal, dorsal horn, ventral horn, dorsal root ganglion, ventral root, spinal nerve
		Draw a cross section of the spinal cord. Label the sensory tracts on the left and right sides including: Fasciculus gracilis, Fasciculus cuneatus, Dorsal spinocerebellar tract, ventral spinocerebellar tract, spinothalamic tract
		Draw another cross-section of the spinal cord and label the motor tracts on the left and right sides including: Lateral vestibulospinal tract, rubrospinal tract, and lateral corticospinal tract

	Wk 5	Sketch a lateral view of the brainstem and label the midbrain, pons, and medulla
		Draw a posterior view of the cerebellum and label the anterior lobe, posterior lobe, and vermis
	Wk 6	None
<u>Unit 3: April 5</u>	Wk 7	Draw a coronal section of the brain (see fig 6-1 and 6-6) and label: epithalamus, thalamus, subthalamus, hypothalamus, caudate nucleus, putamen, globus pallidus, right lateral ventricle, left lateral ventricle, and third ventricle
		Draw a sagittal (or medial) section of the brain (fig 6-2) and label the following: medulla, pons, midbrain, thalamus, hypothalamus, cerebellum, lateral ventricle, corpus callosum, and cerebral hemispheres
		Draw a coronal section of the brain (see fig 6-8) and label the internal capsule and corona radiata
	Wk 8	None
	Wk 9	Draw a sketch of the meninges (See Fig 6-11) including the superior sagittal sinus space. Label: skull, dura mater, arachnoid mater, subarachnoid space, pia mater, sinus, and arachnoid villi
	Wk 10	None
<u>Unit 4: May 3</u>	Wk 11	Draw four coronal sections of the brain and shade in impaired areas in the following conditions: brain death, coma, PVS, and MCS (see Fig 9-3)
	Wk 12	Draw a table distinguishing between features of lower motor neuron damage and upper motor neuron damage
	Wk 13	Draw a sketch of the visual system (See fig 2-2) and identify the L and R visual fields, L and R retinas, optic nerves, optic tracts, optic chiasm, optic radiations, and primary visual cortex
	Wk 14	Draw a diagram that displays the different classical aphasias, including their similarities and differences
	Wk 15 & 16	None

Exams

Exams will consist of multiple-choice, matching, labeling, true-false, fill-in-the-blank, definition and short answer questions. Three exams will be given in class on the date assigned. The final exam will be held on the University assigned final date and at a time. A portion of the final exam will cover new information and a portion will be cumulative, covering information across the semester. Preparing for any exam is expected to take time. If there are questions about material, please come see me or visit with the TA. We want to facilitate your learning and success.

****No make-up exams will be given unless (1) the instructor is notified prior to the exam via email or phone AND (2) there is evidence of sickness or emergency****

Exams will require a Scantron Pearson NCS #229630 form. Scantrons are available at the UTD Bookstore and Off Campus Books. You must bring your **UTD student identification card** (Comet card) to each exam. If you do not have your student identification card, it is at the instructor's discretion for up to a 4-point deduction on the exam. During examinations, please be prepared to

secure all personal belongings, turn-off cell phones, remove hats/caps, and sign a statement of academic integrity. You may be escorted to the restroom or asked to change seating at any time.

Once the first student has completed an exam and left the room, no late admittance will be allowed. All students must turn exams in at the end of the class time. When completed with an exam please refrain from discussions outside of the classroom as this can be a distraction to remaining testers. Exams will be available for review with the TA for 2 weeks following the release of exam scores

Grading Policy

Grading

Weekly Online Quizzes: 60 points (13 weekly quizzes, dropping the lowest grade)

Unit Illustrations: 80 points

Unit 1: 20 points possible

Unit 2: 20 points possible

Unit 3: 20 points possible

Unit 4: 20 points possible

Exams: 300 points

Final Exam: 100 points - including a section over new material, and a cumulative section

Total: 540 points

Course Grades will be assigned as follows:

<i>Points Earned</i>	<i>Letter grade</i>	<i>Points Earned</i>	<i>Letter grade</i>	<i>Points Earned</i>	<i>Letter grade</i>	<i>Points Earned</i>	<i>Letter grade</i>
519-540	A+	465-480	B+	411-426	C+	357-372	D+
492-518	A	437-464	B	383-410	C	329-356	D
481-491	A-	427-436	B-	373-382	C-	319-328	D-
						0-318	F

Course Policies

Important!

Instructional material (including but not limited to recordings, outlines, notes, slides) **MAY NOT** be distributed or reproduced except for the exclusive personal use of students enrolled in the course. Course materials **MAY NOT be posted on the Internet without express written permission of the instructor.** Violations are subject to civil penalties or criminal prosecution under the federal Copyright Act of 1976. Students who violate this rule regarding copyright infringement are subject to disciplinary action.

Electronics

The course requires a great deal of anatomy discussion and I rely heavily on drawing structures. I would highly suggest having paper and pen/pencil (possibly with multiple colors) available. Please be respectful to fellow students and the instructor and ensure computer/tablet use is related to lecture material. If technology use is repeatedly distracting, the student(s) may be asked to leave the lecture.

Lecture material:

You are responsible for information presented in the lectures as well as information from indicated portions of the textbook. Please make sure to gather missed lecture notes, handouts, announcements, etc. from classmates. Announcements, grades, and assignment information will be posted on eLearning. I recommend logging on to eLearning.utdallas.edu daily to check for any new

information. Lecture slides will not be posted; however I will regularly post outlines to aid in organizing lecture content.

Extra Credit:

No individualized extra credit opportunities will be available in this course. Extra credit opportunities may arise across the semester. In that case announcements will be made both in class and on eLearning. If you are concerned about your grade, please come see me as early as possible, I am available to help answer questions.

American Speech Language Hearing Association Standards Addressed in this Class: How knowledge is conveyed and how knowledge and skill acquisition will be demonstrated

Standard IV-B

The applicant must have demonstrated knowledge of basic human communication and swallowing processes, including the appropriate biological, neurological, acoustic, psychological, developmental, and linguistic and cultural bases.

Knowledge will be conveyed via class lectures, readings, and videos

Acquisition will be demonstrated via class discussion, exams, and homework assignments

Standard IV-C

The applicant must have demonstrated knowledge of communication and swallowing disorders and differences and swallowing disorders, including the appropriate etiologies, characteristics, anatomic/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates.

Knowledge will be conveyed via class lectures, readings, discussions, and videotapes. Acquisition will be demonstrated via required class discussions, exams, and homework assignments

Standard IV-D

For each of the areas specified in Standard VI-C, the applicant must have demonstrated current knowledge of the principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates.

Knowledge will be conveyed via class lectures, readings, discussions, and videotapes. Acquisition will be demonstrated via required class discussions, exams, and homework assignments

Standard IV-E

The applicant must have demonstrated knowledge of standards of ethical conduct.

Knowledge will be conveyed via class lectures, readings, discussions, and videos. Acquisition will be demonstrated via required class discussions and exams

Standard IV-G

The applicant must have demonstrated knowledge of professional contemporary issues.

Knowledge will be conveyed via class lectures, readings, discussions, and videos. Acquisition will be demonstrated via required exams, and homework assignments

Students will demonstrate the following skills:

1. Define aspects of function, activity, and participation barriers within the WHO social model of disability

As measured by:

Successful completion of exams and class discussion

Written assignment

2. Identify structures of the central vs. peripheral nervous system as they relate to communication.

As measured by:

Successful completion of exams

3. Contrast theoretical perspectives on brain functionality.

As measured by:

Successful completion of exams and class discussion

Written assignment

4. Describe the mind-brain debate and provide examples of key historical researchers in the debate.

As measured by:

Successful completion of exams and class discussion
Written assignment

5. List and define the anatomical orientation terms as they relate to nervous system structures.

As measured by:

Successful completion of exams and class discussion
Written assignment

6. Outline the structural development of the nervous system.

As measured by:

Successful completion of exams and class discussion

7. Identify nervous system cells and outline the steps in neuron firing.

As measured by:

Successful completion of exams and class discussion
Written assignment

8. Describe select nervous system disorders involving nervous system cells.

As measured by:

Successful completion of exams and class discussion
Written assignment

9. Illustrate a cross-section of the spinal cord and label key anatomical areas

As measured by:

Successful completion of exams and class discussion
Written assignment

10. List the cranial nerves and relate breakdowns in function to the relevant cranial nerves relating to articulation, voice, swallowing, and hearing

As measured by:

Successful completion of exams and class discussion

11. Contrast form and function of the cerebellum, thalamus, basal ganglia as they relate to gross motor movements and speech production.

As measured by:

Successful completion of exams and class discussion
Written assignment

12. Classify components of the ventricular system and brain vascular systems.

As measured by:

Successful completion of exams and class discussion
Written assignment

13. Identify structure and function cerebral hemisphere landmarks including lobes and functionality of primary sensory, motor, visual, and sound processing cortical regions.

As measured by:

Successful completion of exams and class discussion
Written assignment

14. Explain causes of damage to the cerebral hemispheres including cerebral vascular accidents and traumatic brain injury.

As measured by:

Successful completion of exams and class discussion
Written assignment

15. Interpret Brodmann numbers as a tool for brain navigation

As measured by:

Successful completion of exams and class discussion
Written assignment

16. Summarize primary neurological structures involved in consciousness and specific disorders of consciousness.

As measured by:

Successful completion of exams and class discussion
Written assignment

17. Outline major components of the motor speech system and connect regions of damage to forms of dysarthria

As measured by:

Successful completion of exams and class discussion
Written assignment

18. Outline major components involved in comprehending, reading, speaking, and writing language and describe features of primary forms of aphasia.

As measured by:

Successful completion of exams and class discussion
Written assignment

19. Describe the stages of the normal swallow and primary brain regions involved in the central swallowing system.

As measured by:

Successful completion of exams and class discussion
Written assignment

20. List neurologic disorders that cause dysphagia and the nature of the swallowing problem for each disorder.

As measured by:

Successful completion of exams and class discussion
Written assignment

21. Define attention, memory, and executive function and describe the neural basis of each.

As measured by:

Successful completion of exams and class discussion
Written assignment

22. Relate selected disorders including traumatic brain injury, dementia, and Huntington's disease to changes in attention and memory.

As measured by:

Successful completion of exams and class discussion
Written assignment

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.