

# SLPA 453 001: Neurological Foundations of Speech and Language

Fall/2021

**Program Affiliation:** Special Education and Communication Disorders  
**Class Meetings:** Monday and Wednesday 2:00 – 3:15 P.M., in **Henzlik Hall 53** (1430 Vine St) (City Campus)  
**Credit:** 3  
**Prerequisites:** None.  
**Instructor:** Yingying Wang, Ph.D.  
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Office hours by appointment, schedule via email  
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**Teaching Assistant:** Soyoun Park, MA, CCC-SLP  
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## Course Description

This course is a required course for undergraduate students from Communication Sciences and Disorders (CSD) major. The student population of this course mainly consists of seniors from CSD major and some graduate students from Biological Systems Engineering (BSE). This course is designed to teach students about the organizations (neuroanatomy) and functions (neurophysiology) of the human nervous system involved in speech, language production, and hearing. The course covers the foundational knowledge of neuroanatomy and neurophysiology of the central and peripheral nervous systems, the neurology of the human communication processes, and the classification of impairments based on the lesion sites.

## Course Goals

This course prepares undergraduate students for professional study at the graduate level. The overarching goal is to equip them with the foundational knowledge of the neurology of the human communication processes and foster their active engagement with critical thinking of how to bridge theory and practice. In addition to this broad goal, there are two specific goals align with the [standard 3.0B curriculum](#) (Academic and Clinical Education) established by the Council on Academic Accreditation (CAA) in Speech-Language Pathology and the [2020 standards](#) for the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) set by the American Speech-Language Hearing Association (ASHA) (see Table 1).

**Table 1.** Course goals and matched CAA and ASHA standards

#	Course Goals	CAA Standard	ASHA Standard
1	Demonstrate knowledge of the basic human communication, including the appropriate biological, neurological, acoustic, psychological, developmental, and linguistic bases of speech and language.	3.1.2B	IV-B, IV-C
2	Demonstrated the ability to integrate information pertaining to normal and abnormal human development across the life span.	3.1.2B	IV-B

Students enrolled in this course with a major in Speech-Language Pathology (SLP) will have the opportunity to develop competencies meeting ASHA/CAA standards listed in Table 2.

**Table 2.** ASHA/CAA Standards

ASHA/CAA Standards	Evidence	Remediation Plan
<b>3.1.2B Foundations of Speech-Language Pathology Practice (CAA) Standard IV-B, IV-C (ASHA)</b>	The benchmark is 82.5% or greater in the overall course grade. The content is distributed throughout the course as different areas are	Specifics will be determined by the instructor but may include additional studies of the materials

Demonstrate knowledge of basic human communication and swallowing processes, including the appropriate biological, neurological, acoustic, psychological, developmental, and linguistic and cultural bases.	covered. Therefore, the final grade will represent the foundational knowledge of SLP practice.	with re-writing of questions on the exam, an oral exam with the instructor or other measures, or a written product (paper or project) that demonstrates this standard. No change to course grade will be given for remediation.
Demonstrate knowledge of the ability to integrate information pertaining to normal and abnormal human development across the life span.	The benchmark is 82.5% or greater in the overall course grade. The content is distributed throughout the course as different areas are covered. Therefore, the final grade will represent the knowledge of the ability to integrate information.	Same as above

### **Course Objectives**

Table 3 outlines the course objectives to achieve the course goals in Table 1. Upon completion of this course, students are expected to meet all the objectives in Table 3.

**Table 3.** Course objectives and associated course goals

#	Course Objectives	Associated Course Goals
A	Describe the organization of the nerve system and neuronal function in the nerve system.	1
B	Explain the general neuroanatomy and neurophysiology involved in speech, language production, and hearing.	1
C	Identify afferent and efferent pathways and differentiate afferent and efferent pathways.	1, 2
D	Contrast characteristics of speech production and limb/trunk movement.	1, 2
E	Describe the organization and functions of the cranial nerves and the developing brain.	1
F	Use the neurologic substrates of language processing and production to classify language disorders in adults and children and speech syndromes in children.	1, 2
G	Assess lesion sites and classify impairments (sensory, motor, language, integrative functions).	2

### **Course Format**

The seven objectives are structured into weekly lectures, quizzes, discussions, and assignments. By achieving these objectives, you will master the foundational knowledge of the neurology of the human communication processes, which is essential for pursuing an advanced degree in the future. In addition, you will be able to apply the principles of studying the foundational knowledge to analyze practical problems in human communication processes. How the seven objectives are reflected in the daily course structure and routines is listed in the course schedule table.

### **Required Texts**

1. Webb, W.G. (2017). **Neurology for the speech-language pathologist**. Sixth Edition. Elsevier, Inc. ISBN 978-0-323-10027-4

- Vanderah, T.W. (2019). **Nolte's Essentials of the Human Brain**. Second Edition. Elsevier, Inc. ISBN 978-0-323-529310

### Recommended Texts

- Bhatnagar, S.C. (2013). **Neuroscience for the study of communicative disorders**. Fourth Edition. Wolters Kluwer | Lippincott Williams & Wilkins, Baltimore, MD. ISBN 978-1-60913-871-4
- Young, P.A., Young, P.H., & Tolbert, D.L. (2015). **Basic Clinical Neuroscience**. 3rd Edition. Wolters Kluwer | Philadelphia, PA. ISBN 978-1-45117-329-1
- Haines, D.E. (2015). **Neuroanatomy. An Atlas of Structures, Sections, Systems, and Syndromes**. 9th Edition. Wolters Kluwer | Lippincott Williams & Wilkins, Baltimore, MD. ISBN-13: 978-1451186253
- Brain Facts: A Primer on the Brain and Nervous System**. 8th Edition. (2018). Society for Neuroscience ([www.sfn.org](http://www.sfn.org)).  
<http://www.brainfacts.org/the-brain-facts-book>

### Course Requirements and Grading Criteria

You will earn up to 748 points in this course through the following areas.

- Participation (total points:  $2 \times 29 = 58$ )  
Active participation in all activities is expected of all students. This course includes a combination of instructor-led lectures and student-led in-class discussions. Consistent attendance is expected of all students. A sign-up sheet will be provided for every class. Attendance will be taken each class using the sign-up sheet, and attendance records will be considered when assigning a final course grade. Each absence without 24-hour advance written notice will result in a point deduction. Students who are late can sign in after class. I will observe your in-class behavior and contributions to the in-class discussions to evaluate your participation.
- Twelve Weekly Quizzes (total points:  $20 \times 12 = 240$ )  
There will be 12 weekly quizzes based on the assigned readings and lectures to evaluate students' learning outcomes. Quizzes are open-book and will be available on Canvas. Students must complete the quiz independently within forty minutes. Each quiz has 10 questions and is worth 20 points. There will be a total of 240 total possible points.
- Three Group Projects (total points:  $50 \times 3 = 150$ )  
Each group will complete three group projects across the course of the semester. One representative from each group will submit or present the project on behalf of the group. All students will be required to complete peer evaluation and self-evaluation forms based on the grading rubric. Each group project is worth 50 points, for a total of 150 possible points. The due date of each group project is listed on the course schedule table. I reserve the right to change due dates. Changes will be announced and noted in class.
- Two Individual Projects (total points:  $50 \times 2 = 100$ )  
Each student will complete two projects throughout the course. Each individual project is worth 50 points, for a total of 100 possible points. The due date of each individual project is listed on the course schedule table. I reserve the right to change due dates. Changes will be announced and noted in class.
- Mid-term and Final Exams (total points:  $100 \times 2 = 200$ )  
Preparation for the exams is your responsibility. You will take a timed mid-term exam with 40 questions covering the contents discussed in class and any concept in Webb's textbook. The final exam will be available on Canvas from 1 to 3 P.M. on 12/13, including 10 questions covering materials before mid-term and 40 questions covering materials after mid-term. It is impossible to go over all the concepts covered in Webb's textbook. If you need help to understand a specific concept in the text, please contact me. You will have two hours to answer 40-50 questions. You are allowed to have ONE 8.5x11 sheet of notes (front and back) for your mid-term exam and TWO 8.5x11 sheets of notes (front and back) for your final exam. You must upload your note sheets immediately after submitting the exam. Otherwise, you will automatically lose 20 points.

### Grading Criteria

Grade	Grade (%)	Total points (748)
A	92.50-100%	691.90 – 748.00
A-	90.00-92.49%	673.20 – 691.89
B+	87.50-89.99%	654.50 – 673.19
B	82.50-87.49%	617.10 – 654.49
B-	80.00-82.49%	598.40 – 617.09
C+	77.50-79.99%	579.70 – 598.39
C	72.50-77.49%	542.30 – 579.69
C-	70.00-72.49%	523.60 – 541.29
D+	67.50-69.99%	504.90 – 523.59
D	62.50-67.49%	467.50 – 504.89
D-	60.00-62.49%	448.80 – 467.49
F	Below 60.00%	< 448.80

### Class Expectations

1. Learning outside the classroom is essential to enhance your in-class learning experience. Plan to work 6-9 hours per week outside of class to read texts. Readings will not always be discussed in class. However, you are responsible for knowing the information contained in the readings and class lectures.
2. Examinations, course handouts, and course PowerPoint slides will be in electronic form on Canvas.
3. All written assignments will follow the guidelines contained in the publication manual of the American Psychological Association (APA): <http://www.apa.org/books/4200061.html>
4. If you need extra help communicating your thoughts in the written form (i.e., writing a paper), you may wish to consult the writing center on campus. The University of Nebraska-Lincoln Writing Center can provide you with meaningful support as you write for this class as well as for every course in which you enroll. Trained peer consultants can talk with you as you plan, draft, and revise your writing. Please check the [Writing Center website](#) for locations, hours, and information about scheduling appointments.

### Tentative Course Schedule of Topics, Readings, and Assignments

Week	Date	Topic	Pre-class Preparation	Assignments	Course Objectives
1	Mon. 8/23	Course Overview and Introduction to Speech-Language Neurology	Read Syllabus and Chapter 1 of Webb's book		
	Wed. 8/25	Human Communication Nervous System and Central Nervous System (CNS)	Read Chapter 2 of Webb's book p.14 - 28	Quiz 1 due 8/29 10 a.m.	A
2	Mon. 8/30	Specific Cortical Areas and Limbic System (Soyoung Guest Lecture)	Read Chapter 2 of Webb's book p.29 - 33		A
	Wed. 9/1	Diencephalon, Basal Ganglia (Soyoung Guest Lecture)	Read Chapter 2 of Webb's book p.33 - 36	Quiz 2 due 9/5 10 a.m.	A

3	Mon. 9/6	Labor Day --- No Class			
	Wed. 9/8	Cerebellum, Brainstem, and Spinal Cord; Peripheral Nervous System (PNS) (flipped classroom format)	Read Chapter 3 of Webb's book p.36 - 50		A
4	Mon. 9/13	Protection and Nourishment of the Brain, General Principles of Neurologic Organization and Neuroimaging approaches	Read Chapter 3 of Webb's book p.50 - 73	Group project 1 due 9/13 10 A.M.	A
	Wed. 9/15	Neuronal Function in the Nervous System	Read Chapter 4 of Webb's book p.74 - 92	Quiz 3 due 9/19 10 A.M.	A
5	Mon. 9/20	Neurosensory Organization I	Read Chapter 5 of Webb's book p.93 - 104	Group project 1 Peer review due 9/22 6 P.M.	A, B, C
	Wed. 9/22	Neurosensory Organization II	Read Chapter 5 of Webb's book p.104 - 109	Quiz 4 due 9/26 10 A.M.	A, B, C
6	Mon. 9/27	Neuromotor Control of Speech I	Read Chapter 6 of Webb's book p.110 - 123		A, B, D
	Wed. 9/29	Neuromotor Control of Speech II	Read Chapter 6 of Webb's book p.123 - 131	Quiz 5 due 10/3 10 A.M.	A, B, D
7	Mon. 10/4	Neuromotor Control of Speech III	Read Chapter 6 of Webb's book p.131 - 139	Group project 2 due 10/4 10 A.M.	A, B, D
	Wed. 10/6	The Cranial Nerves I (Soyoung Guest Lecture)	Read Chapter 7 of Webb's book p.140 - 150	Quiz 6 due 10/10 10 A.M.	A, B, E
8	Mon. 10/11	The Cranial Nerves II (Soyoung Guest Lecture)	Read Chapter 7 of Webb's book p.150 - 159	Individual Project 1 due 10/11 10 A.M.	A, B, E
	Wed. 10/13	Clinical Speech Syndromes of the Motor Systems I (flipped classroom format)	Read Chapter 8 of Webb's book p.160 - 166	Group project 2 Peer review due 10/13 6 P.M.	A, B, F, G
9	Mon. 10/18	Fall Semester Break --- No Class			
	Wed. 10/20	Clinical Speech Syndromes of the Motor Systems II (flipped classroom format)	Read Chapter 8 of Webb's book p.167 - 173	Mid-term Exam due 10/24 10 A.M.	A, B, F, G
10	Mon. 10/25	Clinical Speech Syndromes of the Motor Systems III	Read Chapter 8 of Webb's book p.173 - 180		A, B, F, G

	Wed. 10/27	Central Language Mechanism and Learning I	Read Chapter 9 of Webb's book p.181 - 194	Quiz 7 due 10/31 10 A.M.	A, B, F, G
11	Mon. 11/1	Central Language Mechanism and Learning II	Read Chapter 9 of Webb's book p.194 - 199		A, B, F, G
	Wed. 11/3	Central Language Mechanism and Learning III	Read Chapter 9 of Webb's book p.199 - 205	Quiz 8 due 11/7 10 A.M.	A, B, F, G
12	Mon. 11/8	Adult Disorders of Language I	Read Chapter 10 of Webb's book p.206 - 215		A, B, F, G
	Wed. 11/10	Adult Disorders of Language II	Read Chapter 10 of Webb's book p.215 - 223	Quiz 9 due 11/14 10 A.M.	A, B, F, G
13	Mon. 11/15	Adult Disorders of Language III	Read Chapter 10 of Webb's book p.223 - 233	Group project 3 due 11/15 10 A.M.	A, B, F, G
	Wed. 11/17	The Developing Brain I	Read Chapter 11 of Webb's book p.234 - 244	Quiz 10 due 11/21 10 A.M.	A, B, E
14	Mon. 11/22	The Developing Brain II (flipped classroom format)	Read Chapter 11 of Webb's book p.244 - 255		A, B, E
	Wed. 11/24	Thanksgiving Student Holiday --- No Class			
15	Mon. 11/29	Pediatric Clinical Speech Syndromes I (flipped classroom format)	Read Chapter 12 of Webb's book p.256 - 266	Individual Project 2 due 11/29 10 A.M.	A, B, F, G
	Wed. 12/1	Pediatric Clinical Speech Syndromes II	Read Chapter 12 of Webb's book p.266 - 271	Quiz 11 due 12/5 10 A.M.	A, B, F, G
16	Mon. 12/6	Pediatric Disorders of Language I	Read Chapter 13 of Webb's book p.272 - 283		A, B, F, G
	Wed. 12/8	Pediatric Disorders of Language II (flipped classroom format)	Read Chapter 13 of Webb's book p.283 - 293	Quiz 12 due 12/12 10 A.M.	A, B, F, G
17	Mon. 12/13	Fall Semester Final Exam @ 1 – 3 P.M. on 12/13 --- No Class			
	Wed. 12/15				

### Exam Scheduling Policy

If you can't take an exam at the scheduled time, you should contact me 24 hours in advance to reschedule the exam time and date. If 24-hour notice is not given, the exam will not be rescheduled, and you will receive a grade of zero for the exam. Suppose a medical or another significant emergency keeps you from attending the exam

without 24-hour notice. I may ask for documentation (e.g., doctor's note, police report), and makeup is at my discretion.

### **Class Attendance Policy**

You are expected to attend all classes in person and keep up with the class information if absent. Attendance will be taken in each class. If you can't make it to the class, you should contact the instructor 24 hours in advance to get written permission. If 24-hour notice is not given, you will get the point reduction for your attendance. If there is a medical or another significant emergency which keeps you from attending the class without 24-hour notice, I may ask for documentation (e.g., doctor note, police report).

If you believe you have been exposed to the coronavirus or feel sick with any of the symptoms of COVID-19, [get tested](#). Visit <https://covid19.unl.edu/health-safety> for more information. Follow [quarantine protocols](#) to prevent spreading any potential illness to others. You should contact me and discuss any needs you may have during the self-quarantining period. I will provide you with course recordings. You will not get the point reduction for your attendance during this period.

### **Student Resource Statement**

The University of Nebraska-Lincoln and the College of Education and Human Sciences are committed to ensuring the health and well-being of our students. This responsibility is shared by all members of the academic community and includes providing resources for the intellectual, academic, financial, physical, social, and mental well-being. To further this, the College of Education and Human Sciences has developed a comprehensive resource guide that has been developed to assist faculty and students in finding specific university and CEHS resources based on their needs. This can be found at <https://cehs.unl.edu/cehs/student-resources/>.

### **Academic Integrity Policy**

UNL Student Code of Conduct: <https://stuafs.unl.edu/ja/code/three.shtml>

Academic honesty is essential to the existence and integrity of an academic institution. The responsibility for maintaining that integrity is shared by all members of the academic community. To further serve this end, the University supports a Student Code of Conduct which addresses the issue of academic dishonesty.

### **Accommodations for Students with Disabilities Policy**

<https://www.unl.edu/ssd/content/syllabus-statement-faculty>

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can discuss options privately. To establish reasonable accommodations, I may request that you register with Services for Students with Disabilities (SSD). If you are eligible for services and register with their office, make arrangements with me as soon as possible to discuss your accommodations so they can be implemented in a timely manner. SSD contact information: 117 Louise Pound Hall.; 402-472-3787

### **Student Mental Health and Resources**

<https://executivevc.unl.edu/faculty/leadership-development/tipsheets/student-mental-health-resources>

Counseling and Psychological Services (CAPS) has psychologists and licensed mental health counselors who provide programs and services to UNL students as well as outreach and education for faculty and staff. If a student tells you that they are struggling or you notice a student is having problems, encourage them to call CAPS at 402-472-7450 (even after hours). If the situation is more urgent, you might decide to accompany the student to CAPS (located inside the University Health Center). If the situation is an emergency, call the UNL police at 402-472-2222. If you're not sure what to do, call CAPS directly and ask to talk to the Director, Dr. Tricia Besett-Alesch, about your concerns.

### **Use of Cell phone and Laptop During Class**

Cell phones must be turned off or in silent mode during class. Students are not allowed to call, text, or surf during class. If you need to take an emergency call or text, you need to leave the class and return when finished. Laptops must be turned off or in silent mode during class. Laptops can only be used to take notes.

## **UNL Student Code of Conduct**

Download Link: <http://stuafs.unl.edu/DeanofStudents/Student%20Code%20of%20Conduct%20May%20Rev%202014%20a.pdf>

Students are expected to adhere to the UNL Student Code of Conduct. "The community of scholars at the University of Nebraska Lincoln is dedicated to personal growth and academic excellence. By choosing to join the community, each member agrees to comply with certain standards of civilized behavior; and therefore, the University of Nebraska Lincoln adopts this Student Code of Conduct, in order that it might: 1) promote a campus environment that supports its educational, research, and outreach missions; 2) protect the members of the community and its resources from disruption and harm; 3) provide a guide to appropriate individual and group behavior; and 4) foster ethical standards and civic virtues, all in keeping with the STUDENT STATEMENT OF VALUES adopted by the Association of Students of the University of Nebraska Lincoln on January 15, 2014." (page 1)

## **Professionalism and Civility**

You are expected to exhibit professional behavior that demonstrates respect for the learning environment. This includes being on time for class, maintaining attention/alertness during class, and refraining from the use of technology except as it relates to instructor-directed in-class activities pertinent to the class in session. Cell phones must be silenced and put away while in the classroom. Net surfing, reading emails, working on assignments for other classes, etc. are not permitted during class time as a courtesy to your fellow students and instructor. It is each student's responsibility to monitor your own behavior and wakefulness. If you find yourself feeling sleepy, it is fine to remove yourself from the classroom, take a few minutes to refresh, and then return to the classroom, though you will be responsible for any missed information.

The nature of the course material may include graphic images and information about medical conditions and surgical procedures. Additionally, course content may touch on a variety of controversial topics, including matters of race, gender, culture, religion, morality, sexuality, and violence. If you anticipate discomfort during such content, you should sit near an exit so that, if necessary, you may step out of the room for a few minutes. As with any other self-initiated break, you will be responsible for any missed information. Furthermore, you have a right to believe whatever you believe about such matters and to express your views (when relevant to the course and in accordance with the principles of professionalism and civility previously described) even when others in the class may disagree or be offended by your views. You also have the right to express disagreement with the views of others, including the instructor, and to decide whether or not to modify your views. Your grade in the class will be based on understanding and reasoning, not on your opinion, though you should be aware that the ASHA Code of Conduct delineates certain professional behaviors that are mandated regardless of one's personal beliefs.

Your work is expected to adhere to professional standards in terms of spelling, grammar, use of first-person language consistent with IDEA standards, appropriate APA-formatted citations of work derived from another source, and timeliness. The grade for any assignment submitted late will be reduced by 5% of its available points for each day overdue, unless the student makes other arrangements with the instructor at least 7 days prior to the assignment due date.

## **Weather Emergencies**

<http://emergency.unl.edu/unlalert>

The decision to close the University because of severe weather or other reasons shall be made by the Chancellor. The Director of University Communications will notify radio and television stations and other appropriate media. Every effort will be made to have closedown information in the news media by 6:00 A.M. for day classes and by 2:00 P.M. for night classes. **During an emergency, the UNL community and public will receive information through the web and news media as well as by email and text through [UNL Alert](#).**



## **Safety**

The safety of all individuals in SECD is of utmost importance to the department. General emergency information can be found on the UNL police department website at <http://www.unl.edu/emergency/>. Faculty and students are strongly encouraged to sign up for the UNL Text Alert system, which provides messages during emergency situations. Sign-up can be completed at <http://emergency.unl.edu/unlalert>. The phone number for UNL police is 402-472-2222. If there is an immediate emergency, dial 911.

The following is a list of topics that may require action. Preparation is the best way to manage emergency situations. Please consider reviewing the policies and procedures for the following possible incidents each semester:

Tornado: <http://emergency.unl.edu/procedure/tornado>

Fire: <http://emergency.unl.edu/procedure/fire>

Active Shooter: <http://emergency.unl.edu/procedure/shooting-incident>

Shots Fired: <http://emergency.unl.edu/shotsfired>

## **Continuity of Instruction**

If face-to-face classes are officially suspended due to a pandemic or other catastrophe, I will strive to continue instruction to those that can participate. If face-to-face classes are suspended, you will receive an email from me, and I will post a Canvas Announcement that details how we will communicate and what you can expect during the time that classes are suspended. Students should check these sources regularly for course information.

## **Copies of Work**

It is recommended that students make a copy of any submitted assignments they turn into the instructor as a record and a back-up of their work.

## **Sharing Course Materials**

Examinations, course handouts, and course PowerPoint slides may not be posted on electronic websites or shared with other people without the written consent of the instructor. Posting or otherwise sharing copies of examinations from this class is not permitted.

## **Caveat**

This syllabus represents a written contractual agreement between us. Occasionally, it may be necessary to revise the syllabus to meet students' or university needs. The instructor reserves the right to revise this syllabus if the need arises. Advance notification will be provided to you.

## **Face Covering Policy**

An individual in this course has a documented need for face coverings to be required in this course. Without divulging personal or identifying information, such a documented need might be that a member of their household is unable to be vaccinated or has a health condition that makes vaccines less effective for them. As a result, the College of Education and Human Sciences has determined that face coverings will be required in this course. If you are unwilling to comply with this requirement, please visit with your advisor about different sections or possible alternative courses that you might take in lieu of this one.

## **When You Forget Masks**

Disposable masks are available for students who are not fully vaccinated and forget to bring one to class. Instructors can direct students to the following locations for a disposable mask at no cost:

- City Campus – a self-service wall dispenser in the hall by the west doors of the Nebraska Union or the Nebraska Union Welcome Desk located on the first floor near the north entrance
- East Campus – the Nebraska East Union Welcome Desk located on the first floor near the north entrance
- Innovation Campus – at Food Innovation Center, 1901 N 21st Street, Room 232

- Peter Kiewit Institute – at the reception desk in Room 107