University of Nebraska System

December 6, 2021

Michael Baumgartner, Ph.D.
Executive Director
Coordinating Commission for Postsecondary Education
PO Box 95005
Lincoln, NE 68509-5005
mike.baumgartner@nebraska.gov

Dear Dr. Baumgartner:

Enclosed is a copy of the proposal to create the Educational Neuroscience Graduate Certificate in the Department of Educational Psychology in the College of Education and Human Sciences at the University of Nebraska-Lincoln. The proposal was approved by the Board of Regents at the December 3, 2021 meeting. Also enclosed is the Proposal for New Instructional Program Form 92-40.

Please do not hesitate to contact me if you have any questions.

With warmest personal regards,

Jeffrey P. Gold, M.D.
Executive Vice President and Provost

Enclosures

JPG/cr

cc: Ronnie Green, Ph.D., Chancellor
Bob Wilhelm, Ph.D., Interim Executive Vice Chancellor
Sherri Jones, Ph.D., Dean, College of Education and Human Sciences
David Jackson, Ph.D., Vice Provost

Office of the Provost
Varner Hall | 3835 Holdrege Street | Lincoln, NE 68583-0743 | 402.472.5242 | FAX: 402.472.4240 | nebraska.edu

COORDINATING COMMISSION
FOR POSTSECONDARY EDUCATION

140 N. 8th Street, Suite 300
Lincoln, NE 68508

Telephone: (402) 471-2847
FAX: (402) 471-2886

PROPOSAL FOR NEW INSTRUCTIONAL PROGRAM

Form 92-40

SECTION I

Institution Submitting Proposal: University of Nebraska-Lincoln

Title of Program: Educational Neuroscience

CIP Code: 42.2706

Organizational Unit in which program will be located:

Department of Educational Psychology
College of Education and Human Sciences

Name of contact person in the event additional information is needed: David S. Jackson, Ph.D., Vice Provost

Telephone: 402-472-5242

Degree, Diploma, or Certificate to be offered (use separate submittal for each level):

Educational Neuroscience Graduate Certificate

Proposed date to initiate program: When approved by the Coordinating Commission

List the location(s) where this program will be offered: UNL

If the program has a projected ending date, please so indicate:

Date approved by Governing Board: December 3, 2021
(Attach all documents related to this proposal upon which the Governing Board made its decision to approve the proposal.)

Chief Executive Officer's or other Authorized Officer's signature: _____
Jeffrey P. Gold, M.D.

TO:	The Board of Regents	Addendum XI-A-4
	Academic Affairs Committee	
MEETING DATE:	December 3, 2021	
SUBJECT:	Creation of the Educational Neuroscience Graduate Certificate in the Department of Educational Psychology in the College of Education and Human Sciences at the University of Nebraska-Lincoln	
RECOMMENDED ACTION:	Approval to create Educational Neuroscience Graduate Certificate in the Department of Educational Psychology in the College of Education and Human Sciences at the University of Nebraska-Lincoln (UNL)	
PREVIOUS ACTIONS:	March 15, 1985 – The Board approved the renaming of the Master of Arts (M.A.), Master of Education (M.Ed.), and Educational Specialist (Ed.S.) degrees in Educational Psychology and Social Foundations to the M.A., M.Ed., and Ed.S. degrees in Educational Psychology.	
EXPLANATION:	The proposed in-person 12-credit hour Educational Neuroscience Graduate Certificate is designed to provide competencies in foundational neuroscience principles, neuroanatomy and analytical techniques, neural foundations of speech/language development and literacy, and the interpretation of neuroscience principles related to emotional and cognitive development. Current and perspective students indicate that receiving formal recognition of these core competencies would be an asset to their career development and future job searches, as school districts apply educational neuroscience research to classroom and extracurricular settings. All coursework will partially satisfy requirements towards master's degree programs in Special Education and Communication Disorders and in Educational Psychology. This proposal has been approved by the Executive Graduate Council. It also has been reviewed by the Council of Academic Officers and the Academic Affairs Committee.	
PROGRAM COST:	$0 (No new faculty or resources are needed to operate this certificate.)	
SOURCE OF FUNDS:	N/A	
SPONSORS:	Elizabeth Spiller Executive Vice Chancellor and Chief Academic Officer Ronnie D. Green, Chancellor University of Nebraska-Lincoln	
RECOMMENDED:	Jeffrey P. Gold, M.D. Executive Vice President and Provost	
DATE:	November 5, 2021	

December 7, 2020

Susan Fritz, Executive Vice President & Provost
University of Nebraska
3835 Holdrege Street
Lincoln, NE 68583

via email

Dear Susan,

I am forwarding materials related to a proposal from the College of Education and Human Sciences to create a Graduate Certificate in Educational Neuroscience, a joint effort by the Departments of Educational Psychology and Special Education & Communication Disorders, to meet a growing demand for expertise in the field. Courses are already established, and there are adequate existing resources and faculty to support the program.

The proposal has the support of the Dean of the College of Education and Human Sciences, the Associate Vice Chancellor and Dean of Graduate Education, the Executive Vice Chancellor, and the Academic Planning Committee. It has my approval and I am requesting you approve it as well.

Sincerely,

Ronnie D. Green, Ph.D.
Chancellor

c: Elizabeth Spiller, Executive Vice Chancellor
Tim Carr, Associate Vice Chancellor and Dean of Graduate Education
Sherri Jones, Dean, College of Education and Human Sciences
Mike Zeleny, Associate to the Chancellor
Renee Batman, Assistant Vice Chancellor and Chief Administrative Officer
Suzi Tamerius, Project Coordinator
Kurt Geisinger, Chair, Academic Planning Committee
Karen Griffin, Coordinator of Faculty Governance
David Jackson, Vice Provost
Cathy Robertus, Executive Assistant to the Provost

University of Nebraska-Lincoln
New Graduate Certificate

I. Descriptive Information

Name of Institution Proposing Graduate Certificate
University of Nebraska-Lincoln (UNL)
Name of Proposed Graduate Certificate
Educational Neuroscience
Name of Program
Educational Psychology
Other Programs Offered in this Field by this Institution
None
CIP Code *[IEA can help with CIP codes or browse here: http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55]*
42.2706: Physiological Psychology/Psychobiology
Subject Code
EDPS, SLPA, PSYC
Primary Administrative Unit for the Proposed Graduate Certificate
Educational Psychology
All Units Participating in the Graduate Certificate
Special Education and Communication Disorders, Educational Psychology
List of Faculty Members who will Serve on Certificate Advisory Committee
Eric Buhs (EDPS) *Carrie Clark (EDPS)* *Hideo Suziki (EDPS)* *Yingying Wang (SECD)*
Proposed Delivery Site
UNL City Campus, UNL East Campus
Graduate Certificate will be offered *[full program, not individual courses]*
___*XX*___ On-campus only _____ Distance only _____ Both (on-campus and distance)
Graduate Certificate will be Offered to
_____ UNL degree seeking _____ UNL non-degree seeking ___*XX*___ Both _____ Other (please explain)
Date Approved by the Governing Board
Pending
Proposed Date the New Graduate Certificate will be Initiated
When approved by the Coordinating Commission

II. Details

A. Description of Proposed Certificate Program

Neuroscience and neuroscience research in education-related areas is one of the fastest growing research areas in the U.S. and internationally. Educational Neuroscience is a rapidly emerging field that incorporates the study of neurodevelopment in typically and atypically developing populations. It brings together researchers in basic neuroscience (e.g., cognitive, developmental, social, and affective), applied neuroscience in education (speech/language/literacy development) and child psychology. This particular certificate program will cover a range of skills important to most educational contexts.

These areas include neuroanatomy, physiology and brain function and acquisition and analyses of neuroimaging and other data acquisition procedures. For this certificate, there will be a specific focus on emotional and cognitive development and on the neural foundations of speech/language development and literacy. Speech and language development, for example, is an excellent example of the inherently interdisciplinary nature of the program because language development delays frequently serve as indicators of later cognitive performance, socio-emotional interactions, academic functioning, and potential problems. Learning the neurobiological aspects of language development also helps students learn how to apply basic neuroscientific findings to a broad range of applied educational contexts that include central aspects of the learning and cognition focus maintained by the Educational Psychology Developmental and Learning Sciences program.

B. Learning Outcomes

- Foundation of basic neuroscience principles, neuroanatomy, and neuroscience data acquisition and analytic techniques.
- Ability to apply relevant neuroscience principles to educational contexts: Affective processing and management (including psychopathology), cognitive development, speech/language development, and language and literacy applications.
- Ability to apply and interpret underlying neuroscience principles to challenges learners present in educational contexts.

C. Admission

Per current UNL policy, students applying to the proposed graduate certificate must have completed a bachelor's degree and must officially submit a Graduate Studies application through the online application portal, including paying the application fee. All certificate applicants will be required to submit GRE scores and evidence of English proficiency if needed. All certificate applicants will be required to submit a short personal statement about why they want to pursue the certificate and fill out a Course of Studies form (see attached). Currently, a minimum of any four of the seven courses offered must be included to fulfill requirements. Certificate applicants who are currently enrolled in a graduate program at the University of Nebraska will be required to submit a single letter of recommendation from their primary academic advisor stating the advisor supports the student completing the certificate. Certificate applicants not currently enrolled in a graduate program at the University of Nebraska will be required to submit three letters of recommendation.

Certificate Program Curriculum

Four courses (12 hrs.) are required to complete the graduate certificate in Educational Neuroscience. There are currently seven courses available, including two offered from UNMC. PSYC 865 and EDPS 922 will comprise the introductory, core courses required for all program students, with two additional courses serving as elective courses that allow the student to tailor the focus of the certificate to cognitive and/or language development. All of the graduate certificate courses are allowable for the master's degree programs in Special Education and Communication Disorders and Educational Psychology.

Required Courses for Master's Degree	Educational Psychology MA Credit Hours	Speech Language Pathology MS Credit Hours	Educational Neuroscience Certificate Credit Hours
EDPS 851 Psychology of Adolescence	3		
EDPS 854 Human Cognition and Instruction	3		
EDPS 960 Advanced Cognitive Psychology in Education	3		
EDPS 961 Cognitive Development	3		
EDPS 967 Motivation	3		
EDPS 859 Statistical Methods	3		
EDPS 800 Foundations of Educational Research	3		
SLPA 862 Cognition And Language in Adults		3	
SLPA 864 Language Disorders - Ages 5 to 21		3	
SLPA 886 Augmentative and Alternative Communication		3	
SLPA 967 Motor Aspects of Verbal Communication		3	
SLPA 874 Clinical Decision Making I		3	
SLPA 875 Clinical Decision Making II		3	
SLPA 966 Swallowing Disorders		3	
SLPA 998 Research Other Than Thesis		3	
Elective Courses for Master's Degree			
PSYC 865 Behavioral Neuroscience	3	3	3*
EDPS 991 Developmental Cognitive Neuroscience	3	3	3
EDPS 922 Mind, Brain & Education	3	3	3*
SLPA 995 Doctoral Seminar: Neural Basis of Reading	3	3	3
SLPA 995 Doctoral Seminar: Neuroimaging & Language Disorders	3	3	3
EDPS 855 Teaching Learners to Learn	3		
EDPS 898 Instructional and Motivational Accommodations for Diverse Learners	3		
EDPS 991 Applied Social Psychology	3		
EDPS 989 Psychology of Reading and Writing	3		
SLPA 862A Language Disorders In Special Populations - Birth to Three		3	
SLPA 862J Severe Disabilities and Autism		3	
SLPA 884 Deaf or Hard of Hearing: Speech & Language Issues		3	
SLPA 888 Linguistic Needs of Bilingual and Culturally Different Students		3	
SLPA 982 Acquired Brain Injury		3	
SLPA 987 Aphasia in Adults		3	
SLPA 988 Dementia		3	
Courses Taught at UNMC			
NSC 820 Methods in Neuroscience			3
NSC 932 Systems Neuroscience			3
Total	**36**	**45**	**12**

*Core course required for all certificate candidates.

D. Completion of Requirements

The certificate advisory board (consisting of three appointed tenure-line faculty, with at least one representing each department) will review all Course of Study forms and approve or deny all substitution requests at the time of application. Per the Office of Graduate Studies policy, students completing a graduate certificate must apply for graduation and pay the graduation fee. An application for graduation will trigger an email from Graduate Studies to the department. Verification of the completion of the certificate requirements will be conducted by the Graduate Support Staff in the graduate certificate's home department, Educational Psychology, and forwarded to the Graduate Faculty Committee for approval. Any questions with regards to requirements will be addressed by the certificate advisory board.

E. Evaluation of Program

The ongoing evaluation of the certificate program will include reporting the number of applicants each year, the number of awarded certificates each year, and breaking those numbers down by degree vs. non-degree seeking students, home department, and other demographic variables. Total number of credits hours also will be tracked, as will the specific courses being used by students to complete the certificate requirements. Students also will be informally surveyed to determine the need for additional sections of existing courses or whether additional courses could increase the attractiveness of the certificate program.

F. Impact on Other Units and Programs

The certificate will provide a valuable, tangible addition to graduate student programs across the social sciences and offer students additional experience and certificate recognition that will help increase their marketability across a range of careers linked to this rapidly expanding and increasing influential area of neuroscience research.

There are no negative or competitive issues anticipated – no other similar programs currently exist w/in the UNL or University of Nebraska systems.

G. Impact on Course Subject Codes

No subject codes need to be created, modified, or deleted in relation to the creation of this certificate program.

III. Review Criteria

A. Adequacy of Resources:

1. Faculty/Staff
   All courses currently exist (several proposed courses may be added at a later date) and are taught by current, tenure-stream faculty as part of their regular teaching assignments.

2. Physical Facilities and Equipment
   No additional facilities or equipment needs are required or anticipated

3. Instructional Equipment and Informational Resources
   No additional instructional equipment needs are required or anticipated

4. Budget Projections [see Table 1 and Table 2].
   There are no projected expenses beyond current department resources as currently allocated.

B. Evidence of Need and Demand

Current graduate students have indicated a strong desire for formal recognition for completion of the set of course offerings as an asset to their career development and future job searches. Applied and community interest is also high. School districts increasingly consume educational neuroscience research and apply to classroom and extracurricular settings. Special Education and Communication Disorders faculty and Educational Psychology faculty consistently receive inquiries from prospective graduate students. The level of national research interest (including funding initiatives from federal agencies) and the level of current and prospective student interest indicate strong growth potential. In the U.S. there are currently only a small handful of programs in educational neuroscience (as of 3.1.19 there appear to be less than ten). We anticipate that marketing centered around the proposed program will accelerate interest further.

V. Additional Review Criteria

A. Centrality to UNL Role and Mission

The Educational Neuroscience certificate program supports a central role of UNL because it significantly expands the educational opportunities for Nebraskans and the broader community, including international components. The interdisciplinary focus of the program also will help further integrate multiple disciplines across the university (which meets one of CEHS values in pursuing their mission). The program also will further advance essential connections between the teaching and research missions of UNL. All of the teaching faculty involved are also very active researchers and performing cutting-edge research that will inform the classroom and certificate program content.

B. Relationship of the proposal to the NU Strategic Framework

[The Board of Regents requires language about the relationship of the proposal to the NU Strategic Framework. That document is available at the NU website http://nebraska.edu/strategic-framework.html]

This certificate will contribute to several key aspects of the UNL strategic framework by creating a quality academic program that is readily available to a broad range of graduate students from various disciplines, will contribute to workforce development across a range of educational disciplines, and the professional training that we will provide will increase university engagement with the state.

The following indicators are likely areas of impact:

- Enrollment increase: a cutting-edge certificate program such as this one, with few national competitors, will be attractive to students in CEHS and UNL in general.
- International student enrollment: this certificate also will be attractive to international students considering CEHS and UNL for their education.
- Workforce development: The workforce demands of the educational communities and professions in Nebraska are presenting an increasing focus on educational neuroscience and related impacts.

C. Consistency with the Comprehensive Statewide Plan for Post-Secondary Education

[Nebraska's statewide goals/plan can be found here: https://ccpe.nebraska.gov/sites/ccpe.nebraska.gov/files/doc/CompPlan.pdf]

This certificate program will contribute to the status of UNL as an exemplary institution that will help meet the workforce needs of the state. By harnessing the research and teaching expertise of Educational Psychology and Special Education and Communication Disorders department faculty in educational neuroscience, this program will actively contribute to the on-going development of novel and impactful educational offerings for UNL students. It will help create skilled graduates (Chapter 2 of the Statewide plan) in an area that is increasing demand in K-12 educational contexts and in public policy and programs. The presence of these graduates in the Nebraska educational workforce also will likely contribute to the formation of future partnerships between educational communities in the state and the university (Chapter 5 of the Statewide plan) by publicizing and applying this emerging neuroscience-based discipline.

D. Avoidance of Unnecessary Duplication

There are no similar or overlapping certificate or graduate programs at UNL or any of the other campuses in the system.

VI. Appendices

A. Letters of Support
B. Course Schedules and Descriptions

University of Nebraska Lincoln

COLLEGE OF ARTS AND SCIENCES
Office of the Dean

January 31, 2020

Dear Dean Carr,

On behalf of the College of Arts & Sciences I have reviewed the proposal for a Graduate Certificate in Educational Neuroscience. I can lend the endorsement of the College of Arts & Sciences to this proposal. This has potential to appeal to students in several of our programs, especially Psychology and Biological Sciences.

Sincerely,

John C. Osterman
Associate Dean for Academic Programs

1223 Oldfather Hall / P.O. Box 880312 / Lincoln, NE 68588-0312 / (402) 472-2891 / FAX (402) 472-1123

University of Nebraska Lincoln

DEPARTMENT OF PSYCHOLOGY

November 13, 2020

Dr. Elizabeth Spiller
Executive Vice Chancellor
208 Administration Building
Lincoln, NE 68588-0420

Dear Dr. Spiller:

I am writing in response to your request for input about the proposed graduate certificate program in Educational Neuroscience. As you may know the Department of Psychology offers considerable education and training in the neurosciences. Our Neuroscience & Behavior Ph.D. program is the second largest in the department, with 11 core faculty. As of this fall, we also offer a Neuroscience specialty "option" for undergraduates majoring in Psychology. We developed this option in response to high levels of interest in neuroscience expressed by our undergraduate students. Psychology's investment on neuroscience also includes five resident faculty at CB3, including Director, Dr. Cary Savage.

Educational Neuroscience focuses on the neurological processes underlying learning and education. It is a growing area that occupies a unique niche within the larger field of neuroscience. The College of Education and Human Sciences, and Educational Psychology in particular, is well positioned to offer and administer a new certificate program in the area. I support their efforts to do so.

There is cutting edge neuroscience work being conducted in many units across campus. For example, in addition to the efforts in Psychology and CB3, significant neuroscience research is being conducted in Engineering and Biological Sciences. These efforts are largely siloed, however, with little interaction among the various groups. Given the growing popularity of neuroscience, it could be beneficial to have more coordination among neuroscience researchers on campus. Regular communication between the various stakeholders could lead to productive collaborations and reduce the possibility of redundancy. The neuroscience faculty in Psychology and I would be happy to help facilitate these interactions.

Sincerely,

David DiLillo

David DiLillo, Ph.D.
Willa Cather Professor & Chair

238 Burnett Hall / P.O. Box 880308 / Lincoln, NE 68588-0308 / (402) 472-3721 / FAX (402) 472-4637

September 20, 2019

To: CEHS Graduate Curriculum Committee

From: Ron Nelson and Michael Scheel

Reference: Certificate Program in Educational Neuroscience

We have reviewed the materials associated with the joint EDPS/SECD Certificate Program in Educational Neuroscience. We understand that EDPS has agreed to be the administrative home for the Certificate Program. We approve the Certificate Program and believe that it will address the interest of many students to better understand the role of neuroscience in education.

University of Nebraska Lincoln
Department of Special Education and Communication Disorders
301 Barkley Memorial Center | P.O. Box 830738 | Lincoln, NE 68583-0738 | 402.472.2145 | Fax 402.472.7697
cehs.unl.edu/secd

Educational Neuroscience Certificate Proposal: Course Schedules and Descriptions

SLPA 995 Doctoral Seminar: Neuroimaging & Language Disorders

Schedule: Offered every fall semester

Course description:
This is a graduate-level seminar course and is designed to explore special topics in recent neuroscience research of language/reading impairment. This course also aims to introduce various neuroimaging techniques including functional Magnetic Resonance Imaging (fMRI), functional Near-InfraRed spectroscopy (fNIRs), Magnetoencephalography (MEG), and Electroencephalogram (EEG). Students will have hands-on experience on real neuroimaging data and learn how to process different types of neuroimaging data through lab sessions.

Students will demonstrate knowledge and skills in the areas listed below:

1. Foundation Knowledge about brain research on topics related to language/reading impairment.
2. Understanding characteristics of different neuroimaging techniques.
3. Hands-on experience on analyzing various neuroimaging data.
4. Demonstrating critical thinking through evaluating current literature on language/reading impairment.
5. Formulating hypotheses of a research topic and developing strategies to test hypotheses.
6. Mastering research methods.
7. Learning scientific communication through in-class presentation.

SLPA 995 Doctoral Seminar: Neural Basis of Reading

Schedule: Offered every fall semester

Course description:
This is a graduate-level course and is designed to address language and literacy acquisition with a special focus on reading development from birth to school-age. Through in-class discussions and case studies, students will learn how to apply assessments and evaluate appropriateness of assessment/treatment plan in evaluating or treating children with reading impairment. In addition, students will learn evidence-based practice in reading intervention and learn how to collect qualitative and quantitative data to monitor progress.

At the end of the course, it is anticipated that students will be able to understand core concepts, research and clinical issues central to reading acquisition.

1. Learn basic concepts, terminology, and theory in reading acquisition.
2. Understand behavioral assessments which can be used to evaluate a child's pre-reading or reading skills.
3. Apply assessment and/or treatment questions to case examples.
4. Evaluate appropriateness of assessment and/or treatment plans.

5. Develop evidence-based experiments.
6. Understand the use of qualitative and quantitative data in monitoring treatment progress.
7. Master interprofessional interactions through role playing.

EDPS 991: Developmental Cognitive Neuroscience

Schedule: Offered spring semesters, alternating years (Spring 2019, Spring 2021, etc.)

Course description:
This is an advanced reading and discussion-based course that will focus on current findings and research in the area of developmental cognitive neuroscience. You will learn about how neuroimaging, genetics, animal neuroscience, neuropsychological case studies, and other biology-based measures have informed the understanding of children's cognitive development, including memory development, language development, reading and mathematics, and social cognition. You will be encouraged to consider whether and how these findings translate to and inform applied practice in diverse educational contexts.

Course goals:
- You will develop a solid foundational knowledge of different stages/processes of brain development and how these neural changes coincide with changes in children's cognitive processes.
- You will be able to describe the importance of a developmental perspective in neuroscience and will apply this perspective when evaluating neuroscience research.
- You will be able to distill relevant information from the developmental cognitive neuroscience literature to inform applied practice in educational and therapeutic contexts.

EDPS 922: Mind, Brain, and Education

Schedule: Offered every fall semester

Course Description:
This is a graduate-level introductory course, designed to provide graduate students (especially, those who pursue their career in the field of education) with the overview of educational neuroscience. Educational neuroscience has increasingly gained prominence as an interdisciplinary science that integrates neuroscience, psychology, and education. Although we primarily focus on neuropsychological perspectives on major educational issues, it is not required for students to have any background in neuroscience – graduate students from any program and department are welcome.

The goals are (1) to understand the neurobiological mechanisms in educational contexts and (2) to encourage students to apply the neuropsychological knowledge to their academic interests, such as teaching, learning, child/adolescent well-being in schools, and so forth. To achieve these goals, I widely cover current trends and research in developmental, cognitive, affective, clinical, and social neuroscience, as well as physiology and genetics, that have implications for promoting learning performance and healthy development in children and adolescents.

PSY 865: Behavioral Neuroscience

Schedule: Offered every spring semester

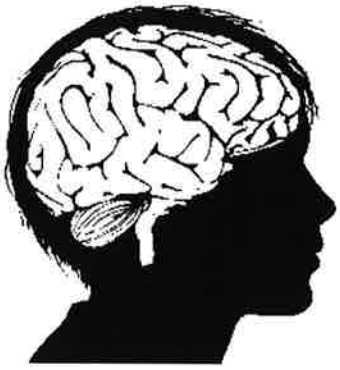
Course description:
Psychology is the study of the mind and behavior. Behavioral Neuroscience (also known as Physiological Psychology) is one branch of psychology that focuses on the biological bases of behavior, particularly focusing on the role of the brain.

The goal of this class is to provide a broad overview of this large, complex and highly interesting field. The semester will be organized into 4 sections, each followed by a non-cumulative exam. Section 1 will cover neuroanatomy, neurochemistry (including addiction) and brain development and aging. Section 2 will focus on sensorimotor processing and control. Section 3 will feature homeostatic processes (including obesity), sleep, and normal and abnormal emotion processing. Finally, section 4 will cover topics of neuropsychology, including memory, attention, executive functioning, language, and clinical neuropsychological assessment.

The course will closely follow the chapter organization of our text, with a few additional topics thrown in, based on my research experience in the field. The instructor will provide separate readings as needed for these topics.

EDPS 991: Developmental Cognitive Neuroscience

Thursdays, 9.30AM – 12.20PM
Rm 139 TEAC



Instructor name: Caron (Carrie) Clark
Office: 241 TEAC
Contact info: cclark4@unl.edu; (402) 472 2248
Office hours: By appointment. I am generally in my office on Tuesday afternoons and Thursday afternoons.

Course prerequisites: NA. However, it is strongly recommended that you take a course in general cognitive development prior to taking this course.
Required materials: NA. Readings will be posted on CANVAS
Recommended texts: Johnson, M. H., & de Haan, M. (2015). Developmental Cognitive Neuroscience, 4th Ed. London: Wiley Blackwell.

This is an advanced reading and discussion-based course that will focus on current findings and research in the area of developmental cognitive neuroscience. You will learn about how neuroimaging, genetics, animal neuroscience, neuropsychological case studies, and other biology-based measures have informed the understanding of children's cognitive development, including memory development, language development, reading and mathematics, and social cognition. You will be encouraged to consider whether and how these findings translate to and inform applied practice in diverse educational contexts.

Course goals

- You will develop a solid foundational knowledge of different stages/processes of brain development and how these neural changes coincide with changes in children's cognitive processes.
- You will be able to describe the importance of a developmental perspective in neuroscience and will apply this perspective when evaluating neuroscience research.
- You will be able to distill relevant information from the developmental cognitive neuroscience literature to inform applied practice in educational and therapeutic contexts.

The course is structured to help you meet these objectives in the following ways: 1) I will provide an overview each week of the main findings and debates from developmental cognitive neuroscience research on the topic; 2) you will reflect on and provide summaries of the readings to develop your knowledge and encourage you to consider different perspectives; 3) you will select one topic and prepare an in-depth literature review on this topic; 4) you will consider practical implications of developmental cognitive research during student facilitations and reflections and when preparing an information sheet for a lay audience based on a specific area of developmental cognitive neuroscience research.

Course Requirements

Assessment	Points
Reading summaries/reflections	70
Class facilitation	50
Literature review	90
Public information sheet	40

Reading summaries/reflections (70 points)
On ten separate occasions (see course schedule below), you should prepare a two-page summary and reflection based on all of the readings for the week, i.e., you can integrate the 'topical' and standard

readings. Each summary will be worth 7 points. Your summary should be submitted in class and you should use it to inform your discussion of the readings. The summary should address the following questions:

1) Summarize the key assertions or take-home points from the readings in a few sentences
2) How do the readings compliment or contradict each other and how do they relate to other points we've considered in the course?
3) How is the role of development highlighted in the readings or, if not, how could the authors have better integrated a developmental perspective?
4) What are some limitations or confusing points in the reading and why?
5) What are 2 practical points or conclusions you took from the readings that you or an educational practitioner could use? If you couldn't come up with practical points, explain why.

Class facilitation (50 points)

At the beginning of the semester, each student will be assigned a week to present on. You should choose a paper that relates to the topic for that week in a practical, applied way or that reflects a controversial, topical issue. I will post potential papers on CANVAS and you are free to use these papers but you are also free to search for and select a different paper that interests you, as long as it is related in some way to the topic and as long as it relates to neurocognitive development. There are many, many other topics you could choose, e.g., music and brain development, substance exposure and neurocognitive development, social discrimination and cognitive development, inflammation and cognitive development, etc. Be sure to send me the paper you choose one week prior to the class so that I can post it on CANVAS. You should prepare a brief summary of the reading to present to your peers. You should also prepare 3 discussion questions for the class. Note: If nobody is assigned to present on a given week, we will discuss a paper that I select. The grading rubric for this assignment is as follows.

Student is well-prepared and clearly has researched the topic. Students who send their papers late will lose points.	15
Student provides a clear summary of the reading	10
Student presents thoughtful discussion questions	10
Student uses readings and research to provide recommendations for practice and application	10
Student notes at least 2 directions for further research	5

Literature review (90 points, due in class on the final day of class)

Select one topic from the class schedule that interests you (e.g., declarative memory development, spatial development, reading development, social cognition, stress, plasticity).

- Write a review of developmental cognitive neuroscience literature on this topic.
- Your review should discuss current perspectives and findings, controversial or unresolved issues, and directions for further research.
- You may prefer to curtail your discussion to a particular age range (e.g., prenatal development, infancy, childhood, adolescence, aging populations) or specific aspect of the topic, e.g., theory of mind. You may also discuss the research in relation to a population with atypical development, e.g., ADHD, autism, learning disabilities, or a genetic abnormality OR you may review the relation of neurocognitive development to a social, demographic or cultural factor, e.g. health disparities, gender identity.
- You should note the strengths and limitations of research approaches to this topic.
- Your review should be 8-10 double-spaced, 12-point font pages in length (not including references). Please note that I am happy to read and provide critical feedback on your paper or discuss your ideas at any time prior to 1 week before the due date. I encourage you to talk to me regularly about your progress in thinking.

The grading rubric is as follows:

Student selects appropriate sources and includes at least 8 citations from peer-reviewed journal articles	10
The paper is focused on *neurological* perspectives and *cognitive development*	10
The paper is well organized and presents a logical, coherent argument or thesis. Studies are integrated appropriately in relation to this argument and there is good flow.	20
The student provides an in-depth discussion of the limitations and strengths of the various studies he/she selects	20
Multiple viewpoints, perspectives or approaches to the topic are presented and discussed	10
The student provides a logical, coherent conclusion with directions for future research	10
The paper is formatted according to APA standards and well-edited	10

Public information sheet (40 points, due in class on the final day of class)

You should prepare a 1-2 page information sheet appropriate for a lay audience based on your literature review topic. The information sheet should provide research-informed advice and information about the topic that a parent, teacher, or other non-academic audience member might find useful and applicable. For instance, if your literature review was based on mathematics, you could explain the importance of the 'approximate number system' for mathematics development and suggest ways in which educators and parents might encourage children's approximate number sense based on your literature review. The information sheet should follow the NebGuide framework (http://extensionpubs.unl.edu/search/?category=YFA). All points should be based on the research you have reviewed but should convey the research in simple language that is appropriate for a non-academic audience. You may wish to provide a list of non-academic, appropriate resources/websites that people could consult for useful ideas and educational activities. You should prepare a 5-minute overview of your information sheet to share with the class on the final day of the course. Each student in the class will also receive a copy of your information sheet. Your peers will provide ratings of your presentation and pamphlet. That is, they will rate how useful and appealing they find the information sheet. Although you do not need to use APA-formatted citations in the guide itself, you should provide a list of references that support your points at the end of the guide.

The information sheet is written in simple, non-academic language that could be easily understood by a lay audience	10
The student has provided practical tips and advice that is accurate and in-keeping with the literature he/she has reviewed	15
The information sheet is visually appealing and easy to read, with appropriate headings, white space, and images	5
Class peers provide a positive review of the information sheet	10

Below is a summary of my grading policy for the course:

Letter Grade	%	Points
A+	95-100	238-250
A	90-94	225-237
A-	85-89	213-224
B+	80-84	200-212
B	75-79	188-199
B-	70-74	175-187
C	60-69	150-174
D	50-59	125-149
F	<50	<125

OTHER IMPORTANT INFORMATION

Accommodations

Any student who feels that she or he may need an accommodation based on the impact of a disability for any part of this course is encouraged to contact me privately to discuss any accommodation needs as determined by Services for Students with Disabilities. This includes students with mental health disabilities like depression and anxiety. It is the policy of the University of Nebraska-Lincoln to provide individualized accommodations to students with documented disabilities that may affect their ability to fully participate in course activities or meet course requirements. To receive accommodation services, students must be registered with Student Disabilities Services, which is located in 232 Canfield (472-3787).

Diversity statement

The University of Nebraska-Lincoln is committed to a pluralistic campus community through Affirmative Action and Equal Opportunity. We assure reasonable accommodation under the Americans with Disabilities Act. Students with disabilities are encouraged to contact me for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in class activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

As an academic and member of the UNL community, I value diversity and inclusion in the classroom and in research. I encourage you to think of my classroom as a place where we value different perspectives, a learning environment that is open to all, and a place for research-informed discussion and debate.

Academic honesty

Academic honesty is essential to the existence and integrity of an academic institution. The responsibility for maintaining that integrity is shared by all academic community members. To further serve this end, the University supports a Student Code of Conduct, which addresses the issue of academic dishonesty. For more information, see http://cehs.unl.edu/edpsych/academic-integrity/ and http://www.unl.edu/gradstudies/current/integrity#plagiarism. As a graduate student, you can be expelled from university for academic dishonesty and I will report it to the disciplinary committee, no exceptions!

Citations and formatting

To avoid plagiarism and ensure academic honesty, you need to cite all of your sources using APA format. Losing grades just because of poor referencing is ... well... sad. That said, you may not have used APA formatting if you are in a different field. In this case, the following websites will be helpful to you: https://owl.english.purdue.edu/owl/resource/560/01/; http://www.apastyle.org; http://www.bibme.org

APA format includes a citation in the text of your paper after an assertion:

- Reference to some work (Surname/s, year).
- e.g., This effect was replicated using a wuzzle and a shnuzzel of a voke (Thing1 & Thing2, 2005).

AND a reference at the end of the paper in a reference list:

- Surname, F.M., Surname, F.M., & Surname, F.M. (year). Title of paper. Title of the journal, Vol(Num), firstpage – lastpage. DOI.
- e.g., Thing1, I.A., & Thing2, I.A. (2005). Bad things happen when I fail to cite. Journal of made up stuff, 4(8), 99-1000. Doi: IAMNOTREAL98765.

The authoritative source on APA formatting is: APA (2010). The publication manual of the American Psychological Association, 6th ed. Washington, DC: APA.

Schedule of topics (subject to change as needed)

	Date	Topic	Readings	Potential student topics
1	01/10	Intro to the course and basic brain anatomy	K.R. Gibson (2011). Neuroanatomy for the non-specialist. In *Brain Maturation and Cognitive Development*. K.R.Gibson & A.C. Peterson Eds. New Brunswick: Aldine Transaction.	
2	01/17	Prenatal brain development	Stiles, J., & Jernigan, T.L. (2010). The basics of brain development, *Neuropsychol. Review,* 20, 327-344. Hoff, A.J., et al. (2013). On the development of functional brain connectivity in the young brain. *Frontiers in Human Neuroscience,* 7, 650.	
3*s	01/24	Theoretical and methodological approaches and methods in developmental cognitive neuroscience	Westermann et al., (2007). Neuroconstructivism. In *The Wiley-Blackwell handbook of Childhood cognitive development.* U Goswami (Ed.) London: Wiley-Blackwell. D'Souza, H. & Karmiloff-Smith, A. (2017). Neurodevelopmental Disorders. *WIRES Cognitive Science, 8,* e1398.	Prenatal stress and the DOHAD model
4*s	01/31	Genetic and epigenetic mechanisms	Johnson, M.H., & de Haan (2015). From gene to brain. *Developmental Cognitive Neuroscience,* pp. 32-42. London: Wiley Blackwell. Lester, B.M., Conradt, E., & Marsit, C. (2016). Introduction to the special section on epigenetics. *Child Dev,* 87, 29-37. Tucker-Drob, E., Briley, D.A., & Harden, K.P. (2013). Genetic and environmental influences on cognition across development and context. *Current Directions in Psychological Science,* 22, 349.	The "genetics of success/intelligence"
5*s	02/07	Early foundations: Perception, orienting and exogenous attention	Knudsen (2004). Sensitive periods in the development of brain and behavior. *Journal of Cognitive Neuroscience,* 16, 1412-1425. Amso, D., & Scerif, G. (2015). The attentive brain: insights from developmental cognitive neuroscience. *Nature Reviews Neuroscience, 16,* 606-619. Colombo, J. (2001). The development of attention in infancy. *Annual Rev. Psych,* 52, 337-367.	Nutrition/the microbiome and neurocognitive development
6*	02/14	Development of memory (focus on implicit memory)	Bauer, P.J. (2007). Toward a neuro-developmental account of the development of declarative memory. *Developmental Psychobiology, 50,* 19-31. Nelson, C.A. Ontogeny of Human Memory. In *Brain Development and Cognition: A Reader.*	LECTURE & MATERIALS ONLINE **DO NOT COME TO CLASS**

			Eds. Johnson, M.A., Munakata, Y., Gilmore, R., London: Blackwell.	
7*s	02/21	Development of memory (focus on autobiographical memory)	Ghetti & Bunge (2012). Neural changes underlying the development of episodic memory during middle childhood. *Developmental Cognitive Neuroscience, 2,* 381.	The role of sleep in learning and memory
8*s	02/28	Development of visuospatial processing	de Haan, M., Nelson, C.A. & Thomas, K.M. (2006) *Neuroscience of cognitive development,* pp. 100-107. Honoken, N.J.: Wiley. Stiles, J., Briana,P. & Ark, W. The development of visuospatial processing. In *Handbook of developmental cognitive neuroscience,* 2nd ed. Nelson, C.A., & Luciana, M. (Eds). Cambridge, MA: MIT.	Video games and visuo-spatial development
9*s	03/07	Development of language	Weiss-Croft, L. J., & Baldeweg, T. (2015). Maturation of language networks in children: A systematic review of 22 years of functional MRI. *NeuroImage,* 123, 269-281. Kuhl, P.K. (2011). Early language learning and literacy: Neuroscience implications for education. *Mind, Brain and Education*, 5,128-142. Berken et al., (2017). Early bilingualism, language attainment and brain development. *Neuropsychologia,* 98, 220-227.	Autism and early speech processing
10*s	03/14	Development of executive control and endogenous attention	Perone, S., Almy, B., & Zelazo, P.D. Toward and understanding of the neural basis of executive function development. In *The Neurobiology of Brain and Behavioral Development.* Gibb, R. & Kolb, B. (Eds). London: Elsevier. Luna, B., Padmanabhan, A., & O'Hearn, K. (2010). What has fMRI told us about the development of executive control through adolescence. *Brain & Cognition, 72,* 101.	The dual process model and adolescent risk-taking
	03/21	SPRING BREAK		ENJOY!!!
11*s	03/28	Development of social cognition	Kilford, E.J., Garret, E. & Blakemore, S.J. (2016). The development of social cognition in adolescence. An integrated perspective. *Neuroscience and Biobehavioral Reviews,* 70, 106-120. Soto-Icaza, P., Aboitiz, F. & Billeke, P. (2015). Development of social skills in children: Neural and behavioral evidence for the elaboration of cognitive models. *Frontiers in Neuroscience,* 9, article 333.	Impact of media exposure on brain and cognitive development

12*s	04/04	Neural development of academic skills	Hruby, G. G., & Goswami, U. (2011). Neuroscience and reading: A review for reading education researchers. *Reading Research Quarterly,* 46, 156-172. Dehaen, S. & Cohen, L. (2007). Cultural recycling of cortical maps. *Neuron, 65,* 384-398. Ansari, D. (2010). Neurocognitive approaches to development of numerical and mathematical cognition: The perils of neglecting the role of development. *Learning and Individual Differences, 20,* 123-129.	Sex differences and similarities in brain development
13s*	04/11	Stress and the developing brain	Lupien, S.J., McEwan, B., Gunnar, M., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behavior, and cognition. Nature Reviews Neuroscience, 10, 434-445. Chen, Y. & Baram, T.Z. (2016). Toward understanding how understanding early-life stress reprograms cognitive and emotional development. Neuropsychopharmacology, 41, 197-206.	Childhood poverty and neurocognitive development
14s*	04/18	Neuroplasticity: Challenges, promises, and implications	Bryck, R.L., & Fisher, P.A. (2012). Training the brain: Practical applications of neural plasticity from the intersection of cognitive neuroscience, developmental psychology and prevention science. *American Psychol, 67,* 87-100. Jolles, D.D., & Crone, E.A. (2012). Training the developing brain: A neurocognitive perspective. *Frontiers in Human Neuroscience, 6, 76.*	'Brain training' and cognitive aging
15	04/25	Information sheet presentations and course wrap-up		

*Students may provide a summary/reflection.
S Student presentation topic

EDPS 922 – Mind, Brain, and Education
Fall Semester 2018
College of Education and Human Sciences
University of Nebraska-Lincoln

Class Meetings:
Thursdays, 9:00 a.m. – 11:50 a.m., Burnett Hall (BURN) 202

Instructor: Hideo Suzuki, Ph.D.
Office Location: Teachers College Hall (TEAC) 230
Office Hours: Mondays, 4:20 p.m. – 5:20 p.m. or by appointment
E-mail: hsuzuki2@unl.edu
Course Credit: 3 hours

Required Readings:
- Mareschal, D., Butterworth, B., & Tolmie, A. (2013). *Educational neuroscience*, Oxford, UK: Wiley-Blackwell.
- Selected reading materials (see *Course Schedule* in the below).
    - These readings will be available online on Canvas during the semester. You are expected to read the assigned reading for class preparation.

Optional Reading:
American Psychological Association. (2010). *The publication manual of the American Psychological Association* (6th ed.), Washington, DC: American Psychological Association.

Course Objectives and Descriptions:
This is a graduate-level introductory course, designed to provide graduate students (especially, those who pursue their career in the field of education) with the overview of educational neuroscience. Educational neuroscience has increasingly gained prominence as an interdisciplinary science that integrates neuroscience, psychology, and education. Although we primarily focus on neuropsychological perspectives on major educational issues, it is not required for students to have any background in neuroscience – graduate students from any program and department are welcome!

The goals are (1) to understand the neurobiological mechanisms in educational contexts and (2) to encourage students to apply the neuropsychological knowledge to their academic interests, such as teaching, learning, child/adolescent well-being in schools, and so forth. To achieve these goals, I widely cover current trends and research in developmental, cognitive, affective, clinical, and social neuroscience, as well as physiology and genetics, that have implications for promoting learning performance and healthy development in children and adolescents.

Class Format:
Prior to each class, students write a reaction paper reflecting on the previous class and do a week's reading assignment. In class, students briefly present their reaction paper, share their thoughts and opinions with other peers, and review the previous class materials. Then, I use PowerPoint slides and give a lecture providing neurobiological information, which helps students

understand the topic and readings of the week. The outline of my lecture is available on Canvas. Lastly, a group of students presents one research paper (labeled as "*R*" in the *Course Schedule*) from the week's readings and leads a class discussion of them.

Course Requirements:

1. Class participation (10 points)
   I grade students' class participations based on my perception of their contributions to class discussions. Students need to be actively involved in presenting their own opinions and listening the opinions of others in class discussions. These actions are essential in a career path and many ways in life.
2. Short reaction papers (5 points × 14 papers)
   In each class, students need to submit a 1- or 2-paged reaction paper (hand- or type-written) in response to the *previous class* (not upcoming topic). In class, students present a summary of their reaction paper and share their thoughts and opinions with other peers. The purpose of this activity is (1) to review your understanding of the previous materials, (2) to improve your critical thinking skills, and (3) to understand other students' perspectives. Here are some examples that can be discussed in a reaction paper:
   - What do you think about a research finding?
   - Do you agree or disagree with a research finding? Why?
   - Can you address different viewpoints on the previous theme?
   - Assess whether a research finding can be applicable in educational contexts.
3. Class presentations (40 points)
   In each week, there are three reading materials which students have to read prior to class. One of the reading materials is a research paper (labeled "*R*" in the *Course Schedule*), whereas the other two are conceptual/review papers which include Mareschal et al's (2013) chapters (labeled "*C*" in the *Course Schedule*). Each student is paired with another peer/other peers and presents the research paper from the week's readings in collaboration with the peer. To prepare for their presentations, students should use the "Reading Guide for Neuroimaging Article" document, which is available on Canvas. Please fill it out, bring its copies to class, and present an overview of the research paper in 20 min according to the "Reading Guide for Neuroimaging Article." At the end of their presentations, students also need to lead and facilitate a discussion of the research paper (e.g., raising questions, educational implications) in class.
4. Written Papers (40 points × 2 papers)
   There are mid-term and final papers, which are 10-12 paged, type-written, double-spaced, and 12-point font. Detailed information about these paper assignments is announced later. Students need to format the papers according to the APA writing style. For details, please refer to *The publication manual of the American Psychological Association* (6th ed.) or OWL (https://owl.english.purdue.edu/owl/resource/560/01/).

Course Grades and Grading Scale:
A student's performance is evaluated in the following. Course grades are posted on Canvas.

Coursework	Points
Class participation	10
Reaction papers	70
Class presentations	40
Written papers	80
Total	200

Below is a summary table of my grading policy.

Letter Grade	Percentage	Points
A+	97-100	194-200
A	93-96	186-193
A-	90-92	180-185
B+	87-89	174-179
B	83-86	166-173
B-	80-82	160-165
C+	77-79	154-159
C	73-76	146-153
C-	70-72	140-145
D+	67-69	134-139
D	63-66	126-133
D-	60-62	120-125
F	0-59	0-119

Academic Honesty:
Academic honesty is essential to the existence and integrity of an academic institution. The responsibility for maintaining that integrity is shared by all academic community members. To further serve this end, the University supports a Student Code of Conduct (http://stuafs.unl.edu/dos/code) which addresses the issue of academic dishonesty. Plagiarism or academic dishonesty (in any aspect of the course) may result in a failing grade and applicable penalties according to UNL guidelines.

Accommodations:
Any student who feels that she or he may need an accommodation based on the impact of a disability is encouraged to contact me privately to discuss any needs for accommodations.

Diversity Statement:
The University of Nebraska-Lincoln is committed to a pluralistic campus community through Affirmative Action and Equal Opportunity. In order to foster an open and comfortable learning environment, this class will follow the Diversity Policy at UNL:
http://stuafs.unl.edu/sa_policies_diversity.shtml

Services for Students with Disabilities:
Students with disabilities are encouraged to contact the instructor or teaching assistant for a confidential discussion of their individual needs for academic accommodation. It is the policy of

the University of Nebraska-Lincoln to provide flexible and individualized accommodations to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office (http://www.unl.edu/ssd/), 132 Canfield Administration, 472-3787 voice or TTY.

Availability of the UNL Writing Center:
I strongly recommend all students to visit the UNL Writing Center (http://www.unl.edu/writing/home) for their writing, especially for their final paper. To earn a better score, a final paper should be clear and well-organized.

Course Schedule (schedule may be subject to change as needed by instructor):

Dates	Topic and reading assignment of the week	Coursework
Aug. 23	**Week 1: Introduction to Educational Neuroscience** • *Supplemental*: Chapter 1 (Mareschal et al., 2013). • *Supplemental*: Fischer, K.W., Goswami, U., & Geake, J. (2010). The future of educational neuroscience. *Mind, Brain, and Education, 4(2)*, 68-80.	Presentation assignment
	Complex Brain Functions	
Aug. 30	**Week 2: Nervous System and Neuroimaging Methods** • *C*: Chapter 2 (Mareschal et al., 2013). • *C*: Mayfield Clinic. (April, 2018). *Anatomy of the brain.* Available at https://mayfieldclinic.com/pe-anatbrain.htm.	RP #1
Sep. 6	**Week 3: Brain Development** • *C*: Stiles, J., & Jernigan, T.L. (2010). The basics of brain development. *Neuropsychology Review, 20(4), 327-348.* • *C*: Giedd, J.N., & Rapoport, J.L. (2010). Structural MRI of pediatric brain development: What have we learned and where are we going? *Neuron, 67(5)*, 728-734. • *R*: Goddings, A.L., Mills, K.L., Clasen, L.S., Giedd, J.N., Viner, R.M., & Blackmore, S.J. (2014). The influence of puberty on subcortical brain development. *Neuroimage, 88*, 242-251.	RP #2 CP #1
Sep. 13	**Week 4: Attention** • *C*: Petersen, S. E., & Posner, M. I. (2012). The attention system of the human brain: 20 years after. Annual Review of Neuroscience. • *C*: Knudsen, E. I. (2007). Fundamental components of attention. *Annual Review of Neuroscience, 30, 57-78.* • *R*: Murphy, C.M., Christakou, A., Daly, E.M., Ecker, C., Giampietro, V., Brammer, M., Smith, A.B., Johnston, P., Robertson, D.M., MRC AIMS Consortium, Murphy, D.G., & Rubia, K. (2014). Abnormal functional activation and maturation of fronto-striato-temporal and cerebellar regions during sustained attention in autism spectrum	RP #3 CP #2

	disorder. *American Journal of Psychiatry, 171(10)*, 1107-1116.	
Sep. 20	**Week 5: Memory** • *C*: Squire, L. R., & Wixted, J. T. (2011). The cognitive neuroscience of human memory sicne H.M. *Annual Review of Neuroscience, 34, 259-288.* • *C*: Klingberg, T. (2010). Training and plasticity of working memory. Trends in Cognitive Sciences, 14, 317-324. • *R*: Talavage, T.M., Nauman, E.A., Breedlove, E.L., Yoruk, U., Dye, A.E., Morigaki, K.E., Feuer, H., & Leverenz, L.J. (2014). Functionally-detected cognitive impairment in high school football players without clinically-diagnosed concussion. *Journal of Neurotrauma, 31(4)*, 327-338.	RP #4 CP #3
Sep. 27	**Week 6: Emotion** • *C*: Chapter 11 (Mareschal et al., 2013). • *C*: Cozolino, L. (2013). How emotional attunement stimulates learning. In *The social neuroscience of education: Optimizing attachment and learning in the classroom* (pp. 139-158). New York, NY: W. W. Norton & Company. • *R*: Romund, L., Raufelder, D., Flemming, E., Lorenz, R.C., Pelz, P., Gleich, T., Heintz, A., & Beck, A. (2016). Maternal parenting behavior and emotion processing in adolescents-an fMRI study. *Biological Psychology, 120*, 120-125.	RP #5 CP #4
Oct. 4	**Week 7: Planning, Decision Making, and Reasoning** • *C*: Chapter 9 (Mareschal et al., 2013). • *C*: Johnson, M.H., & de Haan, M. (2015). Prefrontal cortex, working memory, and decision-making. In *Developmental cognitive neuroscience* (4th ed.) (pp. 183-196). West Sussex, UK: John Wiley & Sons. • *R*: Chang, H.-J., Kang, J. Ham, B.-J., & Lee, Y.-M. (2016). A functional neuroimaging study of the clinical reasoning of medical students. *Advances in Health Sciences Education, 21(5), 969-982.*	RP #6 CP #5
Brain Functions in Education		
Oct. 11	**Week 8: Executive Functions** • *C*: Chapter 12 (Mareschal et al., 2013). • *C*: Allan, J.L., McMinn, D., & Daly, M. (2016). A bidirectional relationship between executive function and health behavior: Evidence, implications, and future directions. *Frontiers in Neuroscience, 10, 386.* • *R*: Spielberg, J.M., Galarce, E.M., Ladouceur, C.D., McMakin, D.L., Olino, T.M., Forbes, E.E., Silk, J.S., Ryan, N.D., Dahl, R.E. (2015). Adolescent development of	RP #7 CP #6 Mid-term paper due

	inhibition as a function of SES and gender: Converging evidence from behavior and fMRI. *Human Brain Mapping, 36, 3194-3203.*	
Oct. 18	**Week 9: Speech, Language, and Literacy** • *C*: Chapter 6 (Mareschal et al., 2013). • *C*: Chapter 7 (Mareschal et al., 2013). • *R*: Chai, X.J., Berken, J.A., Barbeau, E.B., Soles, J., CHalahan, M., Chen, J.K., & Klein, D. (2016). Intrinsic functional connectivity in the adult brain and success in second-language learning. *Journal of Neuroscience, 36(3),* 755-761.	RP #8 CP #7
Oct. 25	**Week 10: Mathematical and Visuospatial Learning** • *C*: Chapter 8 (Mareschal et al., 2013). • *C*: Butterworth, B., Varma, S., & Laurillard, D. (2011). Dyscalculia: From brain to education. *Science, 332(6033),* 1049-1053. • *R*: Price, G.R., Mazzocco, M.M., & Ansari, D. (2013). Why mental arithmetic counts: Brain activation during single digit arithmetic predicts high school math scores. *Journal of Neuroscience, 33(1),* 156-163.	RP #9 CP #8
Nov. 1	**Week 11: Social Development** • *C*: Chapter 10 (Mareschal et al., 2013). • *C*: Burnett, S., Sebastian, C., Cohen Kadosh, K., & Blakemore, S.J. (2011). The social brain in adolescence: Evidence from functional magnetic resonance imaging and behavioural studies. *Neuroscience and Biobehavioral Reviews, 35, 1654-1664.* • *R*: von Der Heide, R., Vyas, G., & Olson, I.R. (2014). The social network-network: Size is predicted by brain structure and function in the amygdala and paralimbic regions. *Social Cognitive and Affective Neuroscience, 9(12),* 1962-1972.	RP #10 CP #9
Nov. 8	**Week 12: Internalizing Behavior Problems** • *C*: Tseng, W.L., Leibenluft, E., & Brotman, M.A. (2014). A systems neuroscience approach to the pathophysiology of pediatric mood and anxiety disorders. *Current Topics in Behavioral Neurosciences*, 16, 297-317. • *C*: Elliott, R., Zahn, R., Deakin, J.F., & Anderson, I.M. (2011). Affective cognition and its disruption in mood disorders. *Neuropsychopharmacology, 36(1),* 153-182. • *R*: Barch, D., Pagliaccio, D., Belden, A., Harms, M.P., Gaffrey, M., Sylvester, C.M., Tillman, R., & Luby, J. (2016). Effects of hippocampal and amygdala connectivity on the relationship between preschool poverty and school-	RP #11 CP #10

	age depression. *American Journal of Psychiatry, 173(6), 625-634.*	
Nov. 15	**Week 13: Externalizing Behavior Problems** • *C*: Crone, E.A., van Duijvenvoorde, A.C.K., & Peper, J.S. (2016). Annual research review: Neural contributions to risk-taking in adolescence – developmental changes and individual differences. *Journal of Child Psychology and Psychiatry, 57(3), 353-368.* • *C*: Friedman, L.A., & Rapoport, J.L. (2015). Brain development in ADHD. *Current Opinion in Neurobiology*, 30, 106-111. • *R*: Hummer, T.A., Wang, Y., Kronenberger, W.G., Dunn, D.W., & Mathews, V.P. (2015). The relationship of brain structure to age and executive functioning in adolescent disruptive behavior disorder. *Psychiatry Research: Neuroimaging, 231(3)*, 210-217.	RP #12 CP #11
Nov. 22	No Class (Thanksgiving Vacation)	
Nov. 29	**Week 14: Cognitive and Emotional Intelligence** • *C*: Deary, I.J. (2012). Intelligence. *Annual Review of Psychology, 63, 453-482.* • *C*: Bechara, A., & Bar-On, R. (2006). Neurological substrates of emotional and social intelligence: Evidence from patients with focal brain lesions. In J.T. Cacioppo, Visser, P.S., & Pickett, C.L. (Eds.), Social neuroscience: People thinking about thinking people (pp. 13-40). Cambridge, MA: MIT Press. • *R*: Brouwer, R.M., van Soelen, I.L., Swagerman, S.C., Schnack, H.G., Ehli, E.A., Kahn, R.S., Hulshoff Pol, H.E., & Boomsma, D.I. (2014). Genetic associations between intelligence and cortical thickness emerge at the start of puberty. *Human Brain Mapping, 35(8)*, 3760-3773.	RP #13 CP #12
Dec. 6	**Week 15: Neuropsychological Implications in Education** • *Supplemental*: Chapter 3 (Mareschal et al., 2013).	RP #14 Final paper due

Note: RP=Reaction Papers; CP=Class Presentations.

PSYC 465/865 BIOS 465
Behavioral Neuroscience
Spring 2019
Tue/Thur 2-3:15
LPH 141

Instructor: **Dr. Cary Savage**
TA: **Caitlin Masterson**

Office: Center for Brain, Biology and Behavior (CB3) CR level (entrance at southeast corner of stadium)
Office Hours: Tuesday/Thursday 3:30-4:30, or by appointment
Email: csavage@unl.edu cmasterson2@unl.edu

Course Description

Psychology is the study of the mind and behavior. Behavioral Neuroscience (also known as Physiological Psychology) is one branch of psychology that focuses on the biological bases of behavior, particularly focusing on the role of the brain. The goal of this class is to give you a broad overview of this large, complex and highly interesting field. The semester will be organized into 4 sections, each followed by a non-cumulative exam. Section 1 will cover neuroanatomy, neurochemistry (including addiction) and brain development and aging. Section 2 will focus on sensorimotor processing and control. Section 3 will feature homeostatic processes (including obesity), sleep, and normal and abnormal emotion processing. Finally, section 4 will cover topics of neuropsychology, including memory, attention, executive functioning, language, and clinical neuropsychological assessment. The course will closely follow the chapter organization of our text, with a few additional topics thrown in, based on my research experience in the field. I will provide separate readings as needed for these topics.

Required Text

Breedlove and Watson (2018): *Behavioral Neuroscience* (8th edition)
Occasional additional readings (journal articles) may be uploaded on Canvas

Course Objectives

Students should aim to accomplish the following goals by the end of the course:

1. Identify and describe the various methods used to study the biological basis of behavior
2. Describe how information transfer and communication occur in the brain
3. Understand the roles of the major neurotransmitters and neural systems that are implicated in various psychological processes, such as cognition, emotion and motor control.
4. Read and critically evaluate behavioral neuroscience research
5. Understand the neural processes underlying different cognitive processes
6. Identify the major regions of the brain and describe their basic functions
7. Learn to synthesize a body of literature

Policies

Electronics: Please minimize cell phone use and use laptops for note-taking only.

Late assignments: If an assignment is turned in within 24 hours of the due time and date, 10% will be deducted, and within 48 hours, 20% will be deducted. Assignments will not be accepted if they are over 48 hours late unless there are documentable serious problems. This should be very rare. If you have a documentable illness or emergency, the late policy is negotiable based on UNL policy. Please make sure to contact me as soon as possible in such circumstances.

Students with disabilities: It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodations to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

Academic Integrity: As students and scientists, we are expected to hold ourselves to a high academic standard. Therefore, we will conduct ourselves in accordance with the regulations of The University of Nebraska's Student Handbook. All violations (e.g., plagiarism, cheating, and/or inappropriate behavior) will be taken seriously and will be handled in accordance with University policy.

Extra Credit: Students are encouraged to participate in research offered in the Department of Psychology. Extra credit will be awarded for up to 10 SONA research credits. For each SONA credit completed, you will earn an added 0.5% on your final grade; thus, you can add up to 5% to your final grade. No more than ½ of SONA research credits (up to 5 SONA points) can be obtained through online studies (i.e., you are encouraged to sign up for IN-PERSON research studies). *Be sure you list this course when signing up for studies to receive credit.

Expectations
Readings: You are expected to read all required materials before the date on the class schedule (see below). We will cover some, but not all sections of the chapters during class. Therefore, it is important that you read the material (book chapters and outside readings) on your own outside of class. Exam material may include assigned material that was not reviewed in class.

Participation: Class attendance is expected. I may cover materials not included in the text and these are fair game for exams. You will have great difficulty doing well in this class if you do not attend on a regular basis. In fact, if you cannot maintain a high attendance rate, please drop this course.

Exams: There will be 4 exams, which you will take in the Exam Commons (see https://its.unl.edu/dlc/students/ for more information). You will need to schedule a time to take the exams on your own. These tests are non-cumulative. Exam material will come from class lectures, the text, and assigned readings. If you are going to miss an exam, it is best to tell me beforehand and we can set up a time for you to take the exam *early*. I understand emergencies happen, so everyone will be allowed 1 make-up exam; however, 10% will be deducted from your final exam grade for each day you are late taking the exam. Exam format will include mostly multiple choice, true/false, and some short answers. Taken together, the 4 exams will count for 80% of your final grade (20% each).

- Regarding the final exam: we will not have a "final"; as exams are non-cumulative, exam 4 will be the last exam for the semester.

Research Paper: You are required to write a research paper of at least 5 pages in length (1-in margins, 12pt font, Times New Roman, double-spaced) on a behavioral neuroscience topic of your choosing (with my approval- see course outline). For this paper, you will research a topic and write a literature review using 5-7 empirical articles from professional, peer-reviewed journals. You may access peer-reviewed journals through online databases. The best online database is PubMed (https://www.ncbi.nlm.nih.gov/pubmed). The paper should not simply describe the studies; it must synthesize the material and be critical and evaluative. Try to come up with some original thoughts. You will submit your paper through Canvas. This will count for 15% of your final grade.

Motivation Symposium Summary Paper: The 2019 Nebraska Symposium on Motivation will be held April 11-12. We will not have class on April 11 but you will be required to attend the symposium during class time. If possible, I strongly encourage you to attend as much of the symposium as you can. You will be required to write a 1-2 page (1-in margins, 12pt font, Times New Roman, double-spaced) summary of what you learned/found interesting during the symposium. You will submit your paper through Canvas. This will count for 5% of your final grade.

Grading: A total of 100 points is available for your final grade.

Exam 1	20pts
Exam 2	20pts
Exam 3	20pts
Exam 4	20pts
Research Paper	15pts
Symposium Summary Paper	5pts
Total	100 points

The following scale is used to assign grades:
A: 90+
B+: 87-89
B: 80-86
C+: 77-79
C: 70-77 (Pass)
D: 60-69
F: ≤ 59

Course Outline (tentative)

Jan 8	Introduction to Behavioral Neuroscience	Chapter 1
Jan 10	Functional Neuroanatomy and Neuroimaging	Chapter 2
Jan 15	Neurophysiology/neurochemistry	Chapters 3/4
Jan 17	Regulatory Behaviors: Addiction	Chapter 4
Jan 22	Lifespan Brain Development: Early development	Chapter 7
Jan 24	Lifespan Brain Development: Aging and Dementia	Chapter 7
Jan 29	*Review for Exam 1*	

Exam 1 available
January 29th – February 2nd

Jan 31	Tour of the Center for Brain, Biology and Behavior	Attendance encouraged but not mandatory
Feb 5	Sensory Processing	Chapter 8
Feb 7	Hearing	Chapter 9
Feb 12	Vision	Chapter 10
Feb 14	Motor Control	Chapter 11
Feb 19	*Review for Exam 2*	

Exam 2 available
February 19th - 23rd

Feb 21	Homeostasis	Chapter 13
Feb 26	Regulatory Behaviors: Obesity	Chapter 13
Feb 28	Sleep	Chapter 14
March 5	Emotion	Chapter 15
March 7	Psychopathology	Chapter 16; *Research Paper Topic Due*
March 12	*Review for Exam 3*	

Exam 3 available
March 12th – 16th

March 14	Learning and Memory	Chapter 17
March 19	No class, Spring Break	
March 21	No class, Spring Break	
March 26	Learning and Memory	Chapter 17
March 28	Attention and Higher Cognition	Chapter 18
April 2	Attention and Higher Cognition	Chapter 18
April 4	Language	Chapter 19
April 9	Traumatic Brain Injury	Assigned readings
	Research Paper Due 4/10	
April 11	Nebraska Symposium on Motivation	
April 16	Savage at NIH. No class	
April 18	Neuropsychological Assessment	Assigned readings; *Symposium Paper Due*
April 23	*Review for Exam 4*	

Exam 4 available
April 23rd – 27th

April 25 Last day of class. The big picture of neuroscience (not tested)

*Reminder: no exam during finals week

SLPA 995 – Section 006: Neuroimaging and Language Disorders

Fall/2019

Program Affiliation: Special Education and Communication Disorders
Class Meetings: Wednesday 3:00 P.M. – 4:40 PM, in 302 BKC
Credit: 2 – 3 hours
Instructor: Yingying Wang, Ph.D.
yingying.wang@unl.edu
Office hours by appointment, schedule via email
Office: C67 East Stadium, 402-472-0106

Course Description

This is a graduate-level seminar course and is designed to train students from diverse backgrounds to understand the characteristics of various types of brain imaging techniques and their applications in the field of communication disorders. This seminar course aims to introduce six neuroimaging techniques including functional Magnetic Resonance Imaging (fMRI), MRI, functional Near-InfraRed spectroscopy (fNIRS), Magnetoencephalography (MEG), Electroencephalogram (EEG), and Diffusion-Weighted Imaging (DWI). Students will have hands-on experience with some brain imaging data and learn how to analyze different types of brain imaging data. Through interactive discussion and literature review, students will practice how to generate neuroscience questions in their research fields of interests and apply appropriate brain imaging techniques to answer their research questions.

Course Prerequisites

None.

Course Objectives

The overall goal is to broaden graduate students' interests in brain research and encourage them to apply brain imaging techniques to do research in their fields of interests. The detailed objectives are listed as follows:

1. Understanding the characteristics of different brain techniques.
2. Providing hands-on experience with analyzing various brain imaging data.
3. Demonstrating critical thinking through evaluating current literature on neuroscience research related to language/reading impairments.
4. Formulating hypotheses of a research topic by choice and developing research strategies to test hypotheses.
5. Mastering research design and methods in the context of brain imaging research.
6. Learning scientific communication through the in-class presentation.
7. Producing a National Institute of Health (NIH)-style specific aim page.

Rationale Statement

This course is an elective course in the speech-language pathology (SLP) graduate degree to broaden those who are interested in neuroscience to have foundation knowledge about brain imaging techniques. It is also open to diverse students from other graduate degree such as Psychology, Biomedical Engineering, Educational Psychology or related fields.

Competency Assignment for Professional Organization (ASHA)

This is an elective course for SLP graduate students and is also open to other graduate students who have interests in brain imaging techniques. Therefore, the main core competencies for ASHA are not tracked for this course. However, SLP graduate students will be engaged with knowledge competencies related to integrating research principles into evidence-based clinical practice.

Teaching/Learning Methods

The format of this class will be a mix of lectures, discussions, and labs.

Readings Assignments

There is no required text for this course. However, you are encouraged to own some books from the list of the recommended reading materials and read journal articles from this list of the recommended professional journals.

Recommended Reading Materials:

- Penny, W. D., Friston, K. J., Ashburner, J. T., Kiebel, S. J., & Nichols, T. E. (Eds.). (2011). *Statistical parametric mapping: the analysis of functional brain images*. Elsevier. ISBN-13: 978-0123725608.
- Carter, M., Shieh, J., (Eds.). (2015). *Guide to Research Techniques in Neuroscience*. Second Edition, Elsevier, ISBN-13: 978-0128005118.
- Passingham, R. E., & Rowe, J. B. (2016). *A short guide to brain imaging: The neuroscience of human cognition*. Oxford University Press, USA. ISBN-13: 978-0198709138.

Recommended Professional Journals:

- Brain
- Brain Research
- Cerebral Cortex
- Human Brain Mapping
- NeuroImage

Technology/Material/Equipment Requirements

None. If you don't have MATLAB installed in your computer, you can use computers in the Ricketts lab located on the third floor of Barkley Memorial Center.

Course Requirements

1. Class Discussions (points: 10)
   You will be graded based on your participation and responses to the in-class discussions.
2. Assignments (points: 30)
   You will be graded based on your responses to the take-home assignments related to the hands-on lab sessions.
3. Final written product (points: 30)
   The student will write a National Institution of Health (NIH)-style specific aim page (1 page).
4. Class presentation (points: 25)
   The student will present the research plan (~30 minutes) in class. The other students will judge, make comments, and ask questions during class.
5. Classroom participation (points: 5)
   Classroom participation is not only attendance but also engagement. Students are expected to attend all classes and participate in the in-class discussions. Attendance will be taken each class, and attendance records will be considered when assigning a final course grade. Perfect attendance and actively participating in class discussion will get 5 points. Absence without 24-hour advance written notice will result in a point deduction.

The grading scale is as follows:

A+	97.50-100	B+	87.50-89.99	C+	77.50-79.99	D+	67.50-69.99
A	92.50-97.49	B	82.50-87.49	C	72.50-77.49	D	62.50-67.49
A-	90.00-92.49	B-	80.00-82.49	C-	70.00-72.49	D-	60.00-62.49
						F	< 60

Class Expectations

1. Students are responsible for all information presented in class as well as independent analysis of information from the readings directly.
2. Learning outside the classroom is essential to enhance your in-class learning experience. Plan to work 4-6 hours per week outside of class to review various literature. You are encouraged to meet with fellow classmates outside of class to study lecture notes, discuss readings, and work on written assignments. However, all assignments except for group projects must be the work of an individual. DO NOT TURN IN DUPLICATE ANSWERS.

3. Readings will not always be discussed in class. However, you are responsible for knowing the information contained in the readings and class lectures. The lecture PowerPoint presentation and other course-related materials will be in electronic form on Canvas.
4. All written assignments will follow the guidelines contained in the publication manual of the American Psychological Association (APA). This book may be found at the following link: http://www.apa.org/books/4200061.html
5. 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 are available to 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. www.unl.edu/writing.

Tentative Schedule of Course Topics and Readings

Date	#	Topic	Readings	Assignments Due*
8/28	1	Introduction	Syllabus	N/A
9/4	2	MRI and its applications	Assigned Readings in Canvas	N/A
9/11	3	fMRI and its applications	Assigned Readings in Canvas	N/A
9/18	4	fNIRs and its applications	Assigned Readings in Canvas	N/A
9/25	5	lab: ***BKC 113 NL3 Wang Lab***	Assigned Readings in Canvas	N/A
10/2	6	CB3 Tour and fNIRS live demo	Assigned Readings in Canvas	**Assignment 1**
10/9	7	EEG/MEG and its applications	Assigned Readings in Canvas	N/A
10/16	8	DWI and its applications	Assigned Readings in Canvas	N/A
10/23	9	No Class – Extra time for lab assignment	Assigned Readings in Canvas	N/A
10/30	10	Assignment 2 Lab	Assigned Readings in Canvas	**Assignment 2**
11/6	11	NIH style specific aim and presentation	Assigned Readings in Canvas	N/A
11/13	12	Research Methods and Design I	Assigned Readings in Canvas	N/A
11/20		No Class – Extra time for writing	Assigned Readings in Canvas	N/A
11/27		No Class - Thanksgiving Holiday	N/A	N/A
12/4	13	Research Methods and Design II	N/A	N/A
12/11	14	In-Class Presentation and Course Summary and Q & A	N/A	N/A
12/18		No Class - Final Exam Week	N/A	**12/18 11 p.m.**

Exam Scheduling Policy

If a student can't take an exam at the scheduled time, he/she should contact the instructor 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 the student will receive a grade of zero for the exam. If there is a medical or other significant emergency which keeps the student from attending the exam without 24-hour notice, the instructor may ask for documentation (e.g., doctor note, police report) and a makeup is at the discretion of the instructor.

Class Attendance Policy

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

Statement of Academic Dishonesty

"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."

Diversity Statement

"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: 232 Canfield Admin. Bldg.; 402-472-3787."

Use of Cell phone and Laptop During Class

Cell phone must be turned off or on 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. Laptop must be turned off or on silent mode during class. Laptop 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 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 (more: 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.

SLPA 995 – Section 007: Neural Basis of Reading

Fall/2019

Program Affiliation: Special Education and Communication Disorders
Class Meetings: Wednesday 5:00 P.M. – 6:40 PM, in 302 BKC
Credit: 2 – 3 hours
Instructor: Yingying Wang, Ph.D.
yingying.wang@unl.edu
Office hours by appointment, schedule via email
Office: C67 East Stadium, 402-472-0106

Course Description

This is a graduate-level course and is designed to address language and literacy acquisition with a special focus on reading development from birth to school-age. Through in-class discussions and case studies, students will learn how to apply assessments and evaluate the appropriateness of assessment/treatment plans in evaluating or treating children with reading impairment. In addition, students will learn evidence-based practice in reading intervention and learn how to collect qualitative and quantitative data to monitor progress.

Course Prerequisites

None.

Course Objectives

This course complies with the ASHA Knowledge and Skills statement regarding the provision of services to individuals with language/literacy impairment. Upon successful completion of this course, it is anticipated that students will be able to understand core concepts, research and clinical issues central to language/literacy acquisition. Students will demonstrate knowledge and skills in the areas listed below:

1. Learn basic concepts, terminology, and theory in reading acquisition.
2. Understand behavioral assessments that can be used to evaluate a child's pre-reading or reading skills.
3. Apply assessment and/or treatment questions to case examples.
4. Evaluate the appropriateness of assessment and/or treatment plans.
5. Develop evidence-based experiments.
6. Understand the use of qualitative and quantitative data in monitoring treatment progress.
7. Master interprofessional interactions through role-playing.

Rationale Statement

This course is an elective course in the speech-language pathology (SLP) graduate degree to broaden those who are interested in both language and literacy to have foundation knowledge about language and reading development. It is also open to diverse students from another graduate degree such as Psychology, Educational Psychology or related fields.

Competency Assignment for Professional Organization (ASHA)

This is an elective course for SLP graduate students and is also open to other graduate students who have interests in brain imaging techniques. Therefore, the main core competencies for ASHA are not tracked for this course. However, SLP graduate students will be engaged with knowledge competencies related to language/reading impairments.

Teaching/Learning Methods

The format of this class will be a mix of lectures and discussions.

Readings Assignments

There is no required text for this course. However, you are encouraged to own some books from the list of the recommended reading materials and read journal articles from this list of the recommended professional journals.

Recommended Reading Materials:

- The neural basis of reading / edited by Piers L. Cornelissen, et al. [et al.] ISBN-13: 978-0195300369, Oxford University Press | 2010, Available at LOVE (Call number: LB1050.5 .N456 2010)
- Carol McDonald Connor, Peggy McCardle, (2015) Advances in reading intervention: research to practice to research. ISBN-13: 978-1598579680
- Beck, I. L., McKeown, M. G., & Kucan, L. (2013). Bringing words to life: Robust vocabulary instruction (2nd ed.). New York: Guilford. ISBN-13: 978-1462508167
- Gunning, T. G. (2013). Creating literacy instruction for all students (8th ed.). Boston: Allyn and Bacon. ISBN-13: 978-0132685795
- Trelease, J. (2013). Read Aloud Handbook (7th ed.) New York: Penguin Books.
- Kamhi, A. G. & Catts, H. W. (2012). Language and reading disabilities (3rd ed.), Boston: Allyn and Bacon. ISBN-13: 978-0137072774
- Stanislas Dehaene, (2010). Reading in the Brain. ISBN-13: 978-0143118053

Recommended Professional Journals:
- Journal of Speech, Language, and Hearing Research, American Speech-Language Hearing Association (ASHA)
- Reading and Writing, Springer
- Scientific Studies of Reading, Society for the Scientific Study of Reading (SSSR)

Technology/Material/Equipment Requirements
None.

Course Requirements
1. Class Discussions (points: 30)
   You will be graded based on your participation and responses to the in-class discussions.
2. Role-Playing (points: 20)
   You will be graded based on your participation and preparation in two in-class role-playings.
3. Take-home Mid-term Quiz (points: 20)
   An online quiz will be given to evaluate your foundational knowledge learned from the class.
4. Final written product (points: 25)
   You will be given a case to evaluate and write a treatment.
5. Classroom participation (points: 5)
   Classroom participation is not only attendance but also engagement. Students are expected to attend all classes and participate in the in-class discussions. Attendance will be taken each week, and attendance records will be considered when assigning a final course grade. Perfect attendance and actively participating in class discussion will get 5 points. Absence without 24-hour advance written notice will result in a point deduction.

The grading scale is as follows:

A+	97.50-100	B+	87.50-89.99	C+	77.50-79.99	D+	67.50-69.99
A	92.50-97.49	B	82.50-87.49	C	72.50-77.49	D	62.50-67.49
A-	90.00-92.49	B-	80.00-82.49	C-	70.00-72.49	D-	60.00-62.49
						F	< 60

Class Expectations
1. Students are responsible for all information presented in class as well as independent analysis of information from the readings directly.
2. Learning outside the classroom is essential to enhance your in-class learning experience. Plan to work 4-6 hours per week outside of class to review various literature. You are encouraged to meet with fellow classmates outside of class to study lecture notes, discuss readings, and work on written assignments. However, all assignments except for group projects must be the work of an individual. DO NOT TURN IN DUPLICATE ANSWERS.
3. Readings will not always be discussed in class. However, you are responsible for knowing the information contained in the readings and class lectures. The lecture PowerPoint presentation and other course-related materials will be in electronic form on Canvas.

4. All written assignments will follow the guidelines contained in the publication manual of the American Psychological Association (APA). This book may be found at the following link: http://www.apa.org/books/4200061.html
5. 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 are available to 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. www.unl.edu/writing.

Tentative Schedule of Course Topics and Readings

Date	#	Topic	Readings	Assignments Due*
8/28	1	Introduction	Syllabus	N/A
9/4	2	Language and Literacy	Assigned Readings in Canvas	N/A
9/11	3	In-Class Discussion	Assigned Readings in Canvas	N/A
9/18	4	The Neural Basis of Reading	Assigned Readings in Canvas	N/A
9/25	5	In-Class Discussion	Assigned Readings in Canvas	N/A
10/2	6	CB3 Tour and Reading assessments	Assigned Readings in Canvas	N/A
10/9	7	Reading interventions	Assigned Readings in Canvas	N/A
10/16	8	In-Class Discussion	Assigned Readings in Canvas	N/A
10/23	9	No Class – Extra time for studying mid-term	Assigned Readings in Canvas	N/A
10/30	10	Case studies	Assigned Readings in Canvas	N/A
11/6	11	Role-play	Assigned Readings in Canvas	**Mid-term**
11/13	12	Role-play & Case studies	Assigned Readings in Canvas	N/A
11/20		No Class – Extra time for final case report	Assigned Readings in Canvas	N/A
11/27		No Class - Thanksgiving Holiday	N/A	N/A
12/4	13	Research Methods and Design	N/A	N/A
12/11	14	Course Summary and Q & A	N/A	N/A
12/18		No Class - Final Exam Week	N/A	**12/18 11 p.m.**

Exam Scheduling Policy

If a student can't take an exam at the scheduled time, he/she should contact the instructor 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 the student will receive a grade of zero for the exam. If there is a medical or another significant emergency which keeps the student from attending the exam without 24-hour notice, the instructor may ask for documentation (e.g., doctor note, police report) and makeup is at the discretion of the instructor.

Class Attendance Policy

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

Statement of Academic Dishonesty

"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."

Diversity Statement

"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: 232 Canfield Admin. Bldg.; 402-472-3787."

Use of Cell phone and Laptop During Class

Cell phone must be turned off or on 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. Laptop must be turned off or on silent mode during class. Laptop 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 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 (more: 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.

TABLE 1: PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM
UNL Educational Neuroscience Graduate Certificate

	(FY2020-21) Year 1		(FY2021-22) Year 2		(FY2022-23) Year 3		(FY2023-24) Year 4		(FY2024-25) Year 5		Total
Personnel	**FTE**	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	**Cost**
Faculty											$0
Professional											
Graduate Assistants											
Support Staff											
Benefits											
Subtotal	0.00	$0	0.00	$0	0.00	$0	0.00	$0	0.00	$0	$0
Operating											
Operating and Supplies											
Equipment											
Library/Information Resources											
Subtotal											$0
Total Expenses		$0		$0		$0		$0		$0	**$0**

TABLE 2: PROJECTED REVENUES - NEW INSTRUCTIONAL PROGRAM
UNL Educational Neuroscience Graduate Certificate

	(FY2020-21) Year 1	(FY2021-22) Year 2	(FY2022-23) Year 3	(FY2023-24) Year 4	(FY2024-25) Year 5	Total
Reallocation of Existing Funds						
Required New Public Funds						
1. State Funds						
2. Local Tax Funds (community colleges)						
Tuition and Fees [1]	$8,184	$16,368	$16,368	$16,368	$16,368	$73,656
Other Funding						
Total Revenue	$8,184	$16,368	$16,368	$16,368	$16,368	$73,656

[1] Tuition only. We anticipate students will complete six credits their first year in the program and six credits their second year in the program. We are assuming four new resident students per year and a four semester time to completion.