

Course Syllabus

Course Information

<i>Course Number</i>	COMD 7387.001/HCS 7387-001/ACN7387.001
<i>Course Title</i>	Developmental Neurobiology of Language and Cognition
<i>Term</i>	Spring, 2026
<i>Days & Times</i>	Thursday, 4:00 – 6:45 p.m.
<i>Location</i>	CD1 A.229

Professor and Contact Information

<i>Professors</i>	Julia Evans, PhD
<i>Email Addresses</i>	jle130030@utdallas.edu
<i>Office Locations</i>	NA
<i>Office Hours</i>	By appointment via Zoom or Teams
<i>Other Information</i>	Best to contact me via UTD email

Course Modality and Expectations

Instructional Mode	In person
Course Platform	Blackboard Collaborate, MS Teams, and Office 365
Expectations	Attend weekly classes; completely weekly assignments, complete semester assignments

COVID-19 Guidelines and Resources

The information contained in the following link lists the University's COVID-19 resources for students and instructors of record.

Please see <http://go.utdallas.edu/syllabus-policies>.

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course.

Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation.

If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Materials

The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

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

Basic coursework in neuroanatomy, anatomy and physiology, language acquisition, and language disorders.

Course Description

In this seminar we will consider current neurological data concerning the pre/postnatal development of the brain and how changed in brain structure and function provide the foundations of children's language development and language disorders. We will examine models of the neural substrates and circuitry underpinning developmental changes in language, cognitive control and working memory, episodic memory and visual face processing in both typical (monolingual and bilingual) language users and in children with developmental language disorders including specific language impairment, reading disabilities, autism spectrum disorder, and cognitive-communicative language disorders.

Student Learning Objectives/Outcomes (with corresponding ASHA standards)

1. Describe the dynamic relationships among genetic, organism, and environmental factors in language development (III-B)
 2. Describe neural correlates of learning and memory (III-B)
 3. Describe neural correlates of language (III-B)
 4. Describe major milestones of neural development (III-B)
 5. Describe neural correlates of language and learning disorders (III-C)
 6. Describe strengths and weaknesses in evidence on neurobiology and language (III-F)
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Required Readings

Readings (available at e-learning) are listed on the course outline below.

Recommended Resources

A number of helpful, free (or low-cost) apps and software packages are available for smartphones and tablets; see http://www.brainvoyager.com/products/products_overview.html for information on, e.g., the Brain Tutor HD and Brain Tutor 3D iphone and ipad apps and the Brain Voyager software package.

Grading Policy

Grades will be determined according to the following elements:

- 33% Directed reading/discussion. Active, thoughtful, respectful and productive participation in all class sessions, including attendance, preparation, engagement, and contributions to discussion
- 33% Project I
- 33% Project II

Updates to required readings and assignments will be announced via e-learning; class members are responsible for checking e-learning on a regular basis.

Project I

Why should [*speech, language, hearing researchers, speech pathologists, ASHA, health care professionals, etc.*] care about brain development?

Project II

TBA

Course Policies

Extra Credit:	Extra credit will not be offered.
Late Work:	Late work will not be accepted.
Class Attendance:	Mandatory.

Academic Calendar

Topics and readings are listed by date below. Class members should have their comments on the assigned readings and paper versions of the reading(s) themselves with them during the class session.

UNIT I. PRINCIPLES OF BRAIN DEVELOPMENT

Jan 22 Introduction

Jan 29 Re-thinking brains, genes, and language

Stiles, J. (2009). On genes, brains and behavior: Why should developmental psychologists care about brain development? *Child Development Perspectives*, 3, 196-202.

Principles of brain development

Stiles, J. (2017). Principles of Brain Development. *WIREs Cogn Sci*, 2017, 8:e1402. Doi: 10.1002/wcs.1402. pg 1 – 5.

UNIT II. CONSTRUCTING A BRAIN

**Feb 5 PRENATAL BRAIN DEVELOPMENT
Major cell types and their functions**

- Jernigan T.L., & Stiles, J. (2017). Constructing a forebrain. *WIREs Cogn Sci*, 2017, e1409. Doi: 10.1002/wcs.1409. pg 1 – 8.

Genes and Gene Products/ Organization of the Mature Brain.

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 327 – 330.

Brain Development in the Embryonic and Early Fetal Periods

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 330 – 332.

Formation of Neural Tube: The First Brain Structure

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 332 – 333

Neural Patterning in the Embryonic Period

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 333 – 334

Supplemental Reading

- Stiles, J., Brown, T.T., Haist, F., & Jernigan, T.L. (2015). Brain and Cognitive Development. *Handbook of Child Psychology and Developmental Science*, 7th Edition. Lerner (Ed). Wiley & Sons, Inc. pg, 14 – 16.

Feb 12

FETAL BRAIN DEVELOPMENT

Neuronal Production

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 335 - 335

Neuronal Migration

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 335 -337

Neuronal Differentiation

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 337 -338

Regressive Events in Prenatal Brain Development

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 338

Formation of Major Brain Pathways in the Prenatal Period

- Stiles, J., Brown, T.T., Haist, F., & Jernigan, T.L. (2015). Brain and Cognitive Development. *Handbook of Child Psychology and Developmental Science*, 7th Edition. Lerner (Ed). Wiley & Sons, Inc. pg, 14 – 16.

Feb 19

POSTNATAL BRAIN DEVELOPMENT

Brain Development in the Postnatal Period

- Stiles, J. & Jernigan, T. (2010). The basics of brain development. *Neuropsychol Rev*, 20, 339 - 341.

Brain, Cognitive and Language Development in the Postnatal Period

- Stiles, J., Brown, T.T., Haist, F., & Jernigan, T.L. (2015). Brain and Cognitive Development. *Handbook of Child Psychology and Developmental Science*, 7th Edition. Lerner (Ed). Wiley & Sons, Inc. pg, 25-35.

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UNIT III. BIOLOGICAL MATURITY

Feb 26

INDIVIDUAL DIFFERENCES IN BRAIN DEVELOPMENT

Individual differences, Biological Maturity

- Brown, T.T. et al. (2012). Neuroanatomical assessment of biological maturity. *Current Biology*, 22, 1693-1698.

Supplemental reading:

- Brown T.T. (2017). Individual differences in human brain development.

Mar 5

EARLY EXPERIENCE & NEURAL PLASTICITY ACROSS THE LIFESPAN

- Bick, J., & Nelson, C. A. (2017). Early experience and brain development. *Wiley Interdisciplinary Reviews: Cognitive Science*, 8(1-2), e1387.
- Power, J. D., & Schlaggar, B. L. (2017). Neural plasticity across the lifespan. *Wiley Interdisciplinary Reviews: Developmental Biology*, 6(1), e216.

Mar 19

Spring Break

Mar 26

STUDENT PRESENTATIONS

April 2

STUDENT PRESENTATIONS

UNIT IV

LANGUAGE DEVELOPMENT

April 9

Developmental changes in Language Brain Networks

- Brown, T. T., Lugar, H. M., Coalson, R. S., Miezin, F. M., Petersen, S. E., & Schlaggar, B. L. (2004). Developmental changes in human cerebral functional organization for word generation. *Cerebral Cortex*, 15(3), 275-290.
- Skeide, M. A., & Friederici, A. D. (2016). The ontogeny of the cortical language network. *Nature Reviews Neuroscience*, 17(5), 323.

UNIT V

BRAINS IN DIALOGUE: SOCIAL BRAIN

April 16

Hyperscanning

Emotional Contagion

- Hirsch, J., Zhang, X., Noah, J. A., & Bhattacharya, A. (2023). Neural mechanisms for emotional contagion and spontaneous mimicry of live facial expressions. *Philosophical Transactions of the Royal Society B*, 378(1875), 20210472.

Interpersonal agreement/disagreement

- Hirsch, J., Tiede, M., Zhang, X., Noah, J. A., Salama-Manteau, A., & Biriotti, M. (2021). Interpersonal agreement and disagreement during face-to-face dialogue: an fNIRS investigation. *Frontiers in human neuroscience*, 14, 606397.

UNIT VI. NEURODEVELOPMENTAL DISORDERS

April 23

Principles & Models

- Stiles, J. (2017). Principles of Brain Development. *WIREs Cogn Sci*, 2017, 8:e1402. Doi: 10.1002/wcs.1402. pg 1 – 5.
- D’Souza, H & Karmiloff-Smith, A., (2017). Neurodevelopmental Disorders. *WIREs Cogn Sci*, 2017, 8:e1389. pg 1 – 8.

- Wozniak R., et al., (2017). The development of autism spectrum disorders: variability and causal complexity. *WIREs Cogn Sci*, 2017, 8:e1389. pg 1 – 8.

Eye contact and social function in disorders

- Hirsch, J., Zhang, X., Noah, J. A., Dravida, S., Naples, A., Tiede, M., ... & McPartland, J. C. (2022). Neural correlates of eye contact and social function in autism spectrum disorder. *Plos one*, 17(11), e0265798.

April 30 **FINAL STUDENT PRESENTATIONS**

May 7 **FINAL STUDENT PRESENTATIONS**

Field Trip Policies / Off-Campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, A to Z Guide, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3, and in Title V, Rules on Student Services and Activities of the university's Handbook of Operating Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating,

plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's Handbook of Operating Procedures.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work

to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:
The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment. If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

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These descriptions and timelines are subject to change at the discretion of the Professor.