

## *Course Syllabus*

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### **Course Information**

Developmental Cognitive Neuroscience  
Tuesday and Thursday 2:30 p.m. – 3:45 p.m., GR 4.208  
Spring 2013

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### **Professor Contact Information**

Instructor: Dr. Mandy J. Maguire  
mandy.maguire@utdallas.edu  
Please use my university email to contact me (NOT ,eLearning)  
mjm053000@utdallas.edu  
the phone is less reliable.  
Office: GR 4.820  
Office hours: Mondays 12:30-2:30 or by appointment

**TA Office Hours: Thursday from 1-2 pm or by appointment**

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

None.

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### **Course Description**

The focus of this course in *Development Cognitive Neuroscience* is on how the human brain develops and changes throughout childhood to support a range of essential cognitive processes.

The course will include the following topics:

- The development of the neuronal structures underlying imperative cognitive processes including: Vision, Attention, Social Cognitive, Memory, Language, and Planning.
- How genetic and environmental factors interact to shape brain networks underlying human behavior
- Methods for studying cognitive neuroscience across the lifespan, including fMRI, EEG, rTMS, and DTI.
- Neuroplasticity and the changing brain throughout development

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### **Student Learning Objectives**

Students will:

- Be able to understand the basics of neurological development
- Understand how cognitive neuroscience is studied across the lifespan

- Understand the neurological correlates of the development of language, memory and problems solving.
- Recognize and differentiate among fundamental concepts and theories in cognitive development and processing
- Compare, discuss, and critically assess research findings and theories in developmental cognitive neuroscience

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### **Required Textbooks and Materials**

Johnson, M.H & de Haan, M. *Developmental Cognitive Neuroscience*, 3<sup>rd</sup> Edition.  
ISBN-10: **1444330861**

**Students are strongly encouraged to do the assigned readings before coming to each class.**

**Lecture outlines and announcements will be placed on eLearning weekly. It is the student's responsibility to check eLearning regularly for class information.**

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### **Assignments & Academic Calendar**

**\*\*These descriptions and timelines are subject to change at the discretion of the instructor. In general, the readings will be about 30 pages per week for the textbook and any additional readings.**

Jan 15: First day, go over class expectations and syllabus

#### **Part 1. Brain Development and how we study it**

Jan 17: Introduction: Chapter 1 of Johnson

Jan 22: Methods Overview

Johnson Chapter 2

Munakata, et al (2004) Developmental cognitive neuroscience: Progress and potential. Trends in Cognitive Sciences, 8(3), 122-128.

Jan 24: Specifics on Methods using Electrophysiology and fMRI

**Picton & Taylor (2007).** Electrophysiological evaluation of human brain development” Casey, Tottenham, Liston & Durston (2005) Imaging the developing brain: What have we learned about cognitive development? Trends in Cognitive Sciences, 9(3), 104-110.

Jan 29: Genetics and neurosciences

Johnson Chapter 3 – short!.

Bishop (2006). Developmental cognitive genetics: How psychology can inform genetics and vice versa.

Feb 5: Building a brain

Johnson Chapter 4 – long chapter, split into two

Feb 7: Continue on building a brain

**Feb 12: Exam 1. Introduction.**

**Part 2. Social development**

Feb 14: Vision and Attention

Johnson Chapter 5

Richards, Reynolds, & Courage, (2010). The neural bases of infant attention. Current directions in Psychological Science, 19(1), 41-46.

Feb 25: Perceiving and action on the social world: Face perception

Johnson Chapter 7, face perception section: pages 102-140

Feb 27: Perceiving and action on the social world: Theory of Mind

Liu, D., Sabbagh, MA, Gehring, WJ, Wellman HM (2009). Neural correlates of children's theory of mind development. Child Development 80(2): 318-326.

Mar 5: Learning and long term memory

Johnson Chapter 8 pages 151-162

**March 7: Exam 2. Social Development**

Spring Break: March 11-15

**Part 3. Language Development**

Mar 19: Language Development – General

Johnson Chapter 9, pages 165-182

March 21 Semantics & Syntax

Friederici (2005) Neurophysiological Markers of early language acquisition: From syllables to sentences”

OR

Kuhl (2004) “Early Language Acquisition: Cracking the speech code

March 26: Atypical Development in Dyslexia

Rice (2009). How different is disordered language?

OR

Galaburda et al (2006) From genes to behavior in developmental dyslexia

March 28: Atypical Development in Autism

Amaral (2008) Neuroanatomy of autism

OR

Tager-Flusberg, Joseph & Folstein (2001) Current Directions in Research in Autism”

**April 2: Exam 3**

**Part 4. Prefrontal Cortex and Special topics**

April 4: Prefrontal cortex, working memory and decision making

Johnson Chapter 10 (short)

April 9: more on prefrontal cortex development

Diamond (2002). Normal development of prefrontal cortex from birth to young adulthood: Cognitive functions, anatomy and biochemistry

April 11<sup>th</sup>: Development of Higher Cognitive Functions (with a focus on adolescence)

Paus, T (2005) Mapping brain maturation and cognitive development during adolescence. Trends in Cognitive Sciences, 9(2), 60-68.

April 16<sup>th</sup>: Developmental Cognitive Neuroscience in the Media

Thompson & Nelson (2001) Developmental Science and the Media, American Psychologist, 56(1), 5-15.

April 18: NO CLASS

April 23: Developmental Cognitive Neuroscience in Education

Ansari, D & Coch, D. (2007). Bridges over troubled waters: Education and Cognitive Neuroscience. TRENDS in Cognitive Sciences.

April 25: Deprivation and the Brain: Romanian Orphanages

Nelson (2007). Cognitive recovery in socially deprived young children: The Bucharest Early Intervention Project, Science, 318, 1937-1940.

OR

Eluvathingal T.J. (2006). Abnormal brain connectivity in children after early severe socioemotional deprivation: A diffusion tensor imaging study. Pediatrics, 117 (6), 2093-2100.

**April 30<sup>th</sup>: Exam 4**

May 2<sup>nd</sup>: Review for final

**Weekly Time & Effort Assessment (5% of Your Grade):**

**By 11:30 pm EVERY Friday evening**, you will need to complete an online “Time & Effort Assessment” through eLearning. In each assessment, you will have the opportunity to document (1) your class attendance for the week,(2) three questions you have generated while preparing for each class, and (3) your weekly study habits. Five percent (5%) of your class grade is based on your completion of the Weekly Time & Effort Assessments. There will be no make-ups and **ONLY the FIRST** assessment will be dropped. **It is your responsibility to remember to complete the Time & Effort Assessments.**

**Exams**

- You must bring your UTD student identification card to each exam. **If you do not have your student identification card, you will lose 5 points on your exam.**
- You must bring scantron **Pearson NCS #229630** to take your exams. Scantrons are available at the UTD Bookstore and Off Campus Books.
- Please arrive on time for exams. If you are 10 minutes late, **5 points** will be deducted from your exam. If you are more than 15 minutes late, you will have to receive permission from the instructor before you may take the exam.

**Grading Policy**

Acquired knowledge will be assessed via exams, which will cover information presented in lectures, readings and videotapes. You will have 4 exams and a cumulative final. **YOU WILL BE ABLE TO DROP THE LOWEST EXAM GRADE.** As a result there will be no make up exams offered. If you miss an exam it counts as your dropped grade. Your final grade will be calculated with equal weighting (25%) to the remaining 4 exams.

Total grade:

Top 4 Exams: 95%

Weekly Time and Effort Assessments: 5%

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### **Course & Instructor Policies**

- While class attendance will not be monitored, it should be noted that regular attendance is required to do well in the course.
- Four exams will be given throughout the semester, and students are expected to arrive for the exams on time. Students who arrive late for an exam will not be permitted to take that exam.
- **MAKE-UP EXAMS WILL NOT BE OFFERED.** A missed exam, for any reason, will be recorded as a 0%. This will be your lowest grade and will count as your dropped exam.
- Exams will cover assigned readings, class lectures, discussions and movies.  
**You will need to bring a pink Pearson NCS #229630 Scantron form for each of the exams (can be purchased at the bookstore).**

### **Professional Dispositions**

Professional dispositions refer to the values, commitments, and professional ethics that influence behaviors toward instructors, peers, and those in the community. Dispositions are guided by beliefs and attitudes related to values such as caring, fairness, honesty, responsibility, and social justice. Students will demonstrate professional dispositions by exhibiting the following professional behaviors:

1. Arriving at class at the designated class start time.
2. Turning off all cell phones and pagers prior to entering the classroom. This also means not using your phone during class, for talking or texting. If you need to be in touch with someone please leave the room to use your phone.
3. Preparing for class by reading the assigned materials.
4. Participating in class discussions in a constructive manner.
5. Interacting in a professional manner (verbally and nonverbally) with the instructor and other students.
6. Taking responsibility for his/her professional learning.

This list of professional behaviors is not limited. Other professional behaviors may be taken into account by the instructor when grading the student at the end of the semester.

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### **Study Skills**

If you need ideas about how to study for the course, please go to the following web address:

<http://www.ucc.vt.edu/stdyhlp.html>

Pay specific attention to the following links:

- (1) Increasing Textbook Reading Comprehension by Using SQ3R
- (2) Strategies for Improving Concentration and Memory

You can use the same strategies in #1 when reviewing your class notes.

**For every hour you spend in class, you should spend 3 hours studying. This means that for this class, you should study the material about 9 hours a week.**

Also:

1. Make sure that you read the book as described in #2 above BEFORE attending class.
2. Bring questions to class so that you can participate during lecture. This will help you be more proactive in your learning and will keep you awake during class. 3 hours is a long time to listen.
3. Take your own notes during class so you are more engaged in the material.
4. Review your class notes and the ppt slides the day following lecture and at least one other day so that you give your brain time to learn the vocabulary and consolidate the information.
5. Make sure that you are studying in a distraction-free environment - no computer, phone, music etc...
6. Study in 45 to 90 minute blocks and take short breaks. Exercise is a great break to take.

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## **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](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.