

Introduction to Educational Neuroscience¹

EDUC 5361

Fall 2016 (Course Dates: 8/25/16-12/07/16)

Instructor: Dr. Kenneth Williford

Meeting Time: Mondays, 5:30PM-8:20PM

Meeting Place: Trimble Hall (TH) 23

Office and Office Hours: 305 Carlisle Hall
W 1:00-4:00PM & by appointment

Faculty Profile

<https://www.uta.edu/profiles/kenneth-williford>

<http://www.uta.edu/philosophy/>

Department of Curriculum and Instruction

<https://www.uta.edu/coed/curricandinstruct/>

Southwest Center for MBE

<https://www.uta.edu/coed/curricandinstruct/research-community/mind-brain/>

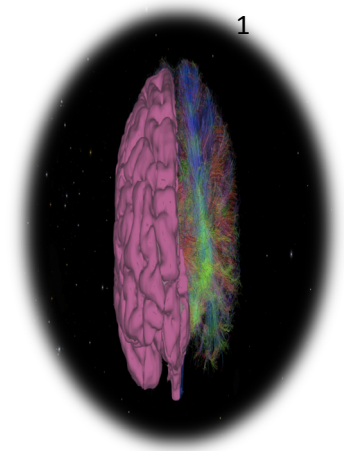
Course Description

This course is an introduction to educational or pedagogical neuroscience. It provides an introduction to functional neuroanatomy, neurophysiology, neuropharmacology, brain mapping techniques, lesion studies, and basic conceptual issues in the cognitive sciences. Applications and connections to pedagogical practice and research are emphasized throughout, and this emphasis guides the selection of material. Highlighted topics include the neural correlates of attention, memory, pattern-recognition, learning and conditioning, perception, emotion, reasoning and consciousness, as well as differing viewpoints about MBE and the philosophical issues the (multi-)discipline raises.

Prerequisites: Admission to the MBE Program or permission of the instructor.

Student Learning Outcomes:

1. Students will be able to identify and describe the function of several brain structures and to use this knowledge to help them consume neuroscientific research.
2. Students will demonstrate their understanding of the relationship between neuroscience and education and the conceptual issues raised by MBE in small reaction papers.



A 3D visualization of the brain rendered using diffusion tensor imaging JONATHAN FISHER, © 2014 NEURODOME

<http://blogs.nature.com/spoonful/files/2014/03/screenshotmri.png>

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¹ Parts of this syllabus were modified from the syllabus of Dr. Jodi Tommerdahl, who is the usual instructor for this course. (<https://mentis.uta.edu/dashboard/file/download/id/177334>)

3. Students will demonstrate an interest in and understanding of an area of their choice based by writing a template-based summary of two research articles from peer-reviewed journals or an alternative writing assignment designed by the student and approved by the instructor.
4. Students will demonstrate an in-depth understanding of research from the fields of neuroscience, learning and education and explain how this understanding relates to their practice.

Required Textbooks and Other Course Materials

There is one required textbook that should be available at the UT Arlington Bookstore but can also be ordered online:

Cognitive Neuroscience: The Biology of the Mind, 4th ed. by Michael S. Gazzaniga, Richard B. Ivry, and George R. Mangun. W. W. Norton & Company, 2013

We will not read all of this book, but selected chapters or sub-chapters will be considered mandatory reading.

All other *required* reading material for this course as well as some suggested but not required reading will be provided by the instructor. Any such material will be posted on Blackboard and announced on class.

There is one required piece of software:

Allen Human Brain Atlas - Brain Explorer® 2

<http://human.brain-map.org/static/brainexplorer>

It can be downloaded for free at the link above.

Evaluation

Evaluation: Attendance, Participation, Quizzes, Two Exams, Two (3-5 page) Argumentative Papers

- (1) Attendance, participation, quizzes and reaction papers (20%)
- (2) Take-home midterm exam (20%)
- (3) Final Project (TBD) (20%)
- (4) 3-5 page research/reflection/hypothetical thinking papers (40%—20% each)

Attendance and Participation

At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I will take attendance everyday. A student may have up to two unexcused absences without this affecting his or her grade adversely. Participation will be noted.

Quizzes and Reaction Papers

There may be some small quizzes or reaction papers relating to the reading material or class discussions. **Quizzes and reaction paper assignments will be posted on Blackboard and should be turned in on**

Blackboard as well. At the end of the semester the cumulative quiz and reaction paper average will be combined with attendance and participation grades to yield 20% of the final grade.

Take-Home Midterm Exam

Around midterm, there will be a take-home examination. Answers will need to be typed, double-spaced, and in a 12-point font with reasonable margins. In order to answer the questions adequately, the student will need to be familiar with the reading and lecture material. It will count for 20% of the final grade. More information concerning expectations and evaluation criteria will be provided later. **The exam is to be turned in through Blackboard.**

Final Project

There will be a final project the exact nature of which will be developed in class with the participation of the students and in the light of the direction the class discussions go and the principles of MBE. By midterm, however, we will have solidified and agreed upon the nature of the final project.

Two 3-5-Page Papers

Each student will write two 3-5-page argumentative/reflective/research/hypothetical-thinking papers. Each paper will count for 20% of your final grade. Details about my expectations for the papers will be given in class.

IMPORTANT POLICIES OF MINE

Late Work: All late work will be docked a full letter grade for every day that it is late.

Incompletes: I will not give a student a grade of Incomplete (I), unless he or she has a compelling, and documented, reason (e.g., a medical emergency).

Plagiarism: No student should have any doubt about what counts as plagiarism. I will assume that every student in this class has seen this tutorial provided by the UTA library and have taken the quiz embedded in it: <http://library.uta.edu/plagiarism/index.php>. All cases of plagiarism will be turned over to the Office of Student Conduct.

UNIVERSITY POLICIES & OTHER USEFUL PIECES OF INFORMATION

Attendance: At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I will follow the policy outlined above. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients "begin attendance in a course." UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities (OSD). Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos. For information regarding Title IX, visit www.uta.edu/titleIX.*

Academic Integrity: Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the

Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

The English Writing Center (411LIBR): Hours are 9 am to 8 pm Mondays-Thursdays, 9 am to 3 pm Fridays and Noon to 5 pm Saturdays and Sundays. Walk In Quick Hits sessions during all open hours Mon-Thurs. Register and make appointments online at <http://uta.mywconline.com>. Classroom Visits, Workshops, and advanced services for graduate students and faculty are also available. Please see www.uta.edu/owl for detailed information.

Library Info:

Library Home Page <http://www.uta.edu/library>
Subject Guides <http://libguides.uta.edu>
Subject Librarians <http://www.uta.edu/library/help/subject-librarians.php>

Library Tutorials <http://www.uta.edu/library/help/tutorials.php>

Connect Off- Campus <http://libguides.uta.edu/offcampus>

Ask A Librarian <http://ask.uta.edu>

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381

Tentative Schedule & Important Dates

This schedule may be subject to some adjustments as the semester progresses. These will be announced in class and posted on Blackboard.

M8/29 Introduction: MBE and Cognitive Neuroscience

M9/5 Labor Day Holiday: No Class

M9/12 Gazzaniga, Chs. 1-3: (1) History of Cognitive Neuroscience
(2) Structure and Function of the Nervous System
(3) Methods of Cognitive Neuroscience

M9/19 Gazzaniga, Chs. 4-5: (4) Hemispheric Specialization **(First 3-5 page paper due.)**
(5) Sensation and Perception

M9/26 Gazzaniga, Ch. 6: (6) Object Recognition

M10/3 Gazzaniga, Ch. 7: (7) Attention **(Approximate week Midterm will be assigned.)**

M10/10 Gazzaniga, Ch. 9: (9) Memory

M10/17 Gazzaniga, Ch. 10: (10) Emotion **(Approximate week Midterm will be due.)**

M10/24 Gazzaniga, Ch. 11: (11) Language

M10/31 Gazzaniga, Ch. 12: (12) Cognitive Control

M11/7 Gazzaniga, Ch. 13: (13) Social Cognition **(Second 3-5 page paper due.)**

M11/14 Gazzaniga, Ch. 14: (14) Consciousness, Free Will, and the Law

M11/21, M11/28 & M12/5—Reading TBD

M12/5 Last Day of Classes

Final Projects due by end of exam week.