**EDUC 5363:** The Neuroscience of Typical and Atypical Development of

Mathematical and Reasoning Ability

Spring 2018

**Instructor(s):** Dr. J. Tommerdahl

**Office Number:** Hammond Hall 424

**Office Telephone Number:** 817-272-0107 (voicemail does NOT work)

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**Office Hours:** As most of you work full time, office hours can be arranged upon request

**Section Information:** EDUC 5363

**Time and Place of Class Meetings:** mainly online with occasional meetings in Science Hall 330 5:30PM.

**Description of Course Content:** This course will take a deep dive into the act of reasoning from several different angles. The main point of view is theoretical in regard to what reasoning is and how it is carried out. We will also study the tools used to examine reasoning, reasoning in non-human animals, atypical reasoning due to disease and reasoning development throughout the lifespan.

**Student Learning Outcomes:** Students will be able to identify, describe and show understanding of:

* What reasoning is
* The history of research in the field
* The neuroscience of reasoning
* Reasoning in various species
* Reasoning development
* Reasoning disorders
* Types of reasoning

**Required Textbook:** Reasoning: The Neuroscience of How We Think, Daniel C. Krawczyk

**Descriptions of major assignments and examinations:**

02/12/18 In-class quiz on chapters 1-3 **(20%)**

03/26/18 In-class quiz on chapters 4-7 **(20%)**

04/30/18 In-class quiz on all material covered since the last quiz **(20%)**

05/04/18 Turn in a 1page description (8 pages in total) of a summary of the main points of 8 different lessons. These pages should be a resource to which you can return in future months and years for review. You may choose which 8 topics you wish to discuss.

**(40%)**

**Grading**:

* 90-100% A
* 80-89% B
* 70-79% C
* 60-69% D
* 0-59 F

**Class Schedule of Readings and Quizzes**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Week 1 Jan. 22-26 | Ch.1: Introduction to reasoning |  |
| Week 2 Jan. 29-Feb. 2 | Ch. 2: History of reasoning research |  |
| Week 3 Feb. 5-9 | Ch. 3: Neuroscience of reasoning |  |
| Week 4 Feb. 12-16 | *In-class* quiz on chapters 1-3 |  |
| Week 5 Feb. 19-23 | Ch. 4:Cross-species reasoning |  |
| Week 6 Feb. 26-March 2 | Ch. 5: Development of reasoning in children |  |
| Week 7 March 5-9 | Ch. 6: Reasoning throughout the lifespan |  |
| March 12-16 | Spring Break |  |
| Week 8 March 19-23 | Ch. 7: Disorders of reasoning |  |
| Week 9 March 26-30 | *In-class* quiz on chapters 4-7 |  |
| Week 10 April 2-6 | Ch. 9: Deduction and induction |  |
| Week 11 April 9-13 | Mathematics and reasoning | Dehaene, Stanislas. "Précis of the number sense." Mind & language 16.1 (2001): 16-36. (Available on Google Scholar) |
| Week 12 April 16-20 | Ch. 12: Social cognition |  |
| Week 13 April 23-27 | Ch. 13: Technology and reasoning |  |
| Week 14 April 30-May4 | *In-class* quiz on weeks 10-13 |  |

Please note that each chapter of the text has a summary of the main points and thought questions. Consideration of these questions will help to prepare you for the in-class quizzes.

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**Make-up Exams**: Make-up exams will be allowed if a scheduled class period for the exam has been cancelled, with agreement between the student and the instructor in advance, or with a doctor’s note.

**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/ses/fao>).

**Americans with Disabilities Act:** The University of Texas at 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)*. 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 that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. 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](http://www.uta.edu/disability) or by calling the Office for Students with Disabilities at (817) 272-3364.

**Academic Integrity:** At UT Arlington, academic dishonesty is completely unacceptable and will not be tolerated in any form, including (but not limited to) “cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts” (UT System Regents’ Rule 50101, §2.2). Suspected violations of academic integrity standards 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 contact the Maverick Resource Hotline by calling 817-272-6107, sending a message to [resources@uta.edu](mailto:resources@uta.edu), or visiting [www.uta.edu/resources](http://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 will be asked to complete an online Student Feedback Survey (SFS) about the course and how it was taught. Instructions on how to access the SFS system will be sent directly to students through MavMail approximately 10 days before the end of the term. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback data is required by state law; student participation in the SFS program is voluntary.

**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.