Introduction to Cognitive Science

SYLLABUS Fall 1wk2

Lecturer: Dr. Rosa Arriaga E-mail: arriaga@cc.gatech.edu Phone: 404.385.4239 Office: 236 TSRBAll course documents are on T-square

### Office hours: **Tuesday & Thursday 30min before/after class** and by appointment

### Graduate Teaching Assistants:

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### Office hour: by appointment

## Required Readings

## Fridenberg & Silverman (SECOND Edition). Cognitive Science: An Introduction to the Study of Mind. Sage Publication, ISBN: 9781412977616; student site is available; on reserve in the library.

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**Course Description**

From the course catalog:  
Multidisciplinary perspectives on cognitive science. Interdisciplinary approaches to issues in cognition, including memory, language, problem solving, learning, perception, and action.

Beyond the course catalog:

In this class we seek to understand the various ways scientists and others have studied the mind. We start with a philosophy and with embodied mind (robotics). At each turn, we will focus on the “ways of knowing the mind/brain” Specifically, we will pay attention to the methodologies used by the various individuals that study the mind (e.g., scientists, philosophers, mathematicians). We will ask the question: “how can these findings, gathered from such disparate methods, be compared/contrasted to give us a better understanding of the mind?” Together, we will work to integrate the various perspectives by consulting the primary literature and methods in each area. We will consult a number of online media (lectures, films, podcasts) that will also serve as an introduction to preeminent scholars and themes. In addition, guest lecturers from around campus will share their cutting-edge research with us. The material covered in this class is a thin sampling of an expansive field. Students are encouraged to broaden their view of cognitive science (and that of the professor ☺) by reading articles and doing projects that are in their domain of expertise. This is NOT a computational cognitive science course. There will be no programming exercises. Rather, we will engage in critical thinking\* about the findings and methods that make up this vast discipline called “Cognitive Science” and what they tell us about the mind.

\* http://www.criticalthinking.org/pages/defining-critical-thinking/766

#### Class Credo

I am committed to respecting the opinions of others and to creating an environment where everyone can share their thoughts and experiences without fear of being judged in or outside of class. Enrollment in this class is taken as an assurance that students too will adhere to this philosophy.

# Student Outcomes

This class is designed to help students develop and use the critical thinking skills and experimental prowess that are characteristic of cognitive scientists. My goal is to create a dynamic learning environment—one where I will set the stage for learning, and where students will take responsibility for their own learning as well as contribute to the learning of others. This is referred to as an active learning approach. I encourage students to go beyond the class material and to seek information that supports this goal.

During this course you will…

• Become familiar with many of the disciplines that make up Cognitive Science.

• Identify a variety of methods used by cognitive scientists and understand the implications that can be drawn from each type.

• Read primary sources by influential cognitive scientists and become aware of controversial issues in the area.

• Practice synthesizing material from a variety of sources and extrapolate findings from one area to another.

# Course Structure

This class is highly customizable; students can choose the dates for their paper topic, quiz dates, and topics for ELOGs. My lectures will draw extensively from the textbook material, and we will use other readings to enhance class discussion. There will be PowerPoint presentation handouts for each chapter, and these will be available online. We will access online content and may have guest speakers that will introduce you to cognitive science research going on around campus and around the world. All material introduced in class is subject to testing.

**Evaluation Components**

**EXAMS**

Each of the three exams is made up of multiple-choice and short-answer questions. The final (EXAM 3) is not cumulative.

*EXPAND YOUR KNOWLEDGE (*EYK, worth about 20%)

On every Exam, you will be able to present material you learned from **2 of the 4 F&S chapters.** This should be material that I did not cover during lecture or that I specifically mention as an EYK option. More details will be presented as Exam 1 draws near.

**QUIZZES: Teaching the “testing effect”**

One of the fundamental results in the area of teaching is that for increased learning, as measured by course outcomes, is accomplished by “testing” rather than simply allowing students to study on their own. Thus, we start each chapter with a quiz!

Parameters for quizzes:

* One quiz per chapter; 5-10 questions per quiz
* I will drop the 3 lowest quiz grades (including 0s due to absences and/or missed quizzes)

Bring a 3 x 5 card to record your quiz answers

* You can also bring a 3 x 5 card with handwritten notes

**PAPER**

A five-page paper is required. The rubric is available online. You may choose from 3 due dates, otherwise you will be assigned to one (see schedule). **You must sign up on the t-square wiki site.**

**TEAM PROJECT**

The assignment has two parts: a paper and an accompanying video. First, prepare a research paper that synthesizes what is currently known (via multiple methodologies) about a given topic or that highlights a methodology and what has been learned across various cognitive domains. The video will be posted to a YouTube channel. (Details will be posted.)

**Class Participation**

Learning in this course requires that students attend class regularly, arrive on time, and contribute to class activities. Each student will be assigned a number. It is each student’s responsibility to sign in for each class. (For more details, see Appendix.)

Extra Credit opportunities will be available throughout the semester. Assignments earning extra credit are capped at 100% (e.g., you cannot earn 102% on any assignment)

Attendance, promptness, and preparedness/participation are worth 10% of the course grade, as follows:

0-2 absences: students earn 10 /10 points\*\*

3 earn 9/10

4 absences: earn 8 /10 points

5-6 absences: earn 7/10 points

7 earn 6/10

8 earn 5/10

9 or more 0/10

Being habitually late can lead to losing points.

#### Grades

Examinations (3) 25%

Quizzes (9 Best) 20%

Paper 25%

Team Project 20%

Class Attendance & Participation 10% (!)

The grade assignments will be as follow:

90% or > earns an A;

80%-89.999% earns a B;

70%-79.999% earns a C;

60%-69.999% earns a D;

59.999% or < earns an F

Note: Because I give students the opportunity to earn extra credit, I don’t “curve” grades, and I don’t “round up.”

#### Policy on Retakes and Late work

**There are NO RETAKES FOR QUIZZES OR EXAMS**. **Late ELOGs are NOT accepted.**

**Extra Credit Policy**

You are allowed to “**solidify”** your final grade by 2 percentage points (earn 80% instead of 78%) by participating in studies with the Psychology Department (SOMA) or HCI (in CS). Three hours of experiments are equal to 1 grade point toward your final grade.

Note: Grade points only come in whole integers.

You can also write ELOGs for extra credit. Three ELOGs are equal to 1 grade point toward your final grade (this is assuming that you get full credit for each ELOG). A max of 4 ELOGs can be written to satisfy the 1-grade-point option. (See Appendix for details—there is a time sensitive issue related to “allowable submissions.”)

**Communication with Professor and TA**

Correspondence about Georgia Tech business must be conducted over GT email addresses. All GT-related business must be conducted with professional etiquette.

Students are responsible for:

* documenting meaningful communication with the professor and TAs by sending an e-mail (with 3790 in the subject line) of the details to the person in question.
* keeping track of all digital copies of your assignments. If material is misplaced during the semester, it is the student’s responsibility to replace it upon request.

The instructor and TAs are responsible for:

* responding within 24 hours.

**Students with Disabilities** Students must provide the instructor with an accommodation letter from the Georgia Tech ADAPTS office (404-894-2564) within the first two weeks of class to have accommodations made.

#### Student Code of Conduct: Academic Honesty

Georgia Tech requires students to adhere to high standards of integrity in their academic work. **ALL** BREACHES OF ACADEMIC INTEGRITY WILL BE REPORTED TO THE DEAN OF STUDENTS AND WILL RESULT IN THE RELEVANT SANCTION. (From a drop in grade to an F) **SEE APPENDIX FOR RELEVANT DETAILS**

**Tentative Course Schedule (Subject to Change)**

**Dates Topics Chapters\* Assignments**

|  |  |  |  |
| --- | --- | --- | --- |
| 8/18 | Syllabus Review  Including Note taking for quizzes |  | **Individual Paper Request (on WIKI) OPEN\*\*** |
| 8/20 | Introduction | 1 | Discussion about critical thinking as it applies to this class  Practice quiz! |
| 8/25 | Introduction | 1Q |  |
| 8/27 | The Philosophical Approach | 2Q |  |
| 9/1 |  | 2 |  |
| 9/3 | Psychological Approach | 3Q | Individual Paper Request **CLOSED** |
| 9/8 |  | 3 | Wynn discussion |
| 9/10 | Cognitive Approach I | 4Q |  |
| 9/15 | Cognitive Approach II | 5Q |  |
| 9/17 | No lecture:   1. Exam 1 review 2. In-class opportunity to meet with team and work on sign up | 5 | **Team Project Initial Proposal/Sign Up**  **11:59pm** |
| **9/22** | **EXAM I (Chapter 1-5)** |  | Physical material from initial team proposal due at start of class |
| 9/24 | Neuroscience approach | 6Q |  |
| 9/29 |  | 6 | **G1 PAPER DUE** |
| 10/1 | Neural Net Approach | 7Q |  |
| 10/6 |  | 7 | Simon Paper discussion groups |
| 10/8 | Evolutionary Approach | 8Q |  |
| **10/13** | **Fall Recess** |  |  |
| 10/15 |  | 8 |  |
| 10/20 | Linguistic | 9Q | **G2 PAPER DUE** |
| 10/22 | No lecture-  Team Project Work time; TAs will be available in the classroom | 9 |  |
| 10/27 | Linguistic |  | Team Project **FINAL** Proposals  Due 1:35pm |
| **10/29** | Exam II (Chapter 6-9) |  |  |
| 11/3 | Emotional Approach | 10Q | Submit--Proposed 3rd in-class paper to review |
| 11/5 |  | 10 |  |
| 11/10 | Social | 11Q |  |
| 11/12 |  | 11 | **G3 PAPER DUE** |
| 11/17 | AI | 12Q |  |
| 11/19 | Ch 12 and 3rd in class article question review |  |  |
| 11/24 | Team project work session (no class) |  | **Team Papers & YouTube videos Due** |
| **11/26** | **Holiday** |  |  |
| 12/1 | **YouTube Video Presentations** |  | Video links must be added to team Proposals on t-square site  **By 11am** |
| 12/3 | **YouTube Video Presentations**  **Exam 3 Review** |  | **Optional Due Date for Team Ppr –** upload **by 1pm** &  Turn physical copy at 1:35pm  Must include all relevant material in a folder |
| **12/8** | **EXAM III— (Chapter 10-12; Cakmak ppr)**  **Regular Length**  **Finals Week** |  | **2:50pm - 5:40pm** |

\*Readings are from F&S; Q = Quiz Date

**Appendix**

**RELEVANT DETAILS**

#### In-class Assignments (including extra-credit)

1) should always be sent in by EMAIL—this way you and I both have evidence that material was turned in.  
2) is always due BEFORE class (1:30pm) on the following meeting time (if Tuesday then the following Tuesday; if Thursday then the following Thursday)

#### Extra Credit

**Toward final grade**

**EXPEDITION LOG** (ELOG)

In lieu of experiments, you may take an intellectual expedition. You will be asked to write about something new that you learned or how themes from this course have played out in other courses or your life. The purpose of the **ELOG** is to encourage you to delve into content and reflect on how what you are learning is relevant to you.

ELOGs must be for CH 1 or 2, 3 or 4, 5 or 6, 7 or 8, 9 or 10, 11 or 12, 13 or 14

ELOGs can take many forms. For example, you may choose to analyze material you gathered from a Google or psych info search or research finding/news covered in the press, or simply provide a commentary on how different themes in this class are related to other academic materials or personal experiences. (ELOG examples are available online.) Note that it is not enough for you to report or summarize what you read; you must provide some explanation or interpretation (compare/contrast) based on the material from class.

• Rubric will be posted, check it carefully

• **3 ELOGs** (earning full credit) count toward 1% of your grade – however THEY ARE DUE during the EXAM period for that chapter—in other words, you can NOT wait until the last exam to hand in ELOGS. See page 3 for other relevant information.

• No late ELOGs are accepted

#### Policy on Regrades

#### All regrade requests must be turned in by the next class meeting. No exceptions. A short written explanation of the grading issue, including appropriate supporting materials (e.g., lecture notes, textbook references, etc.), is required. All petitions must be submitted via email, and all regrade requests for quizzes must be submitted prior to the next exam.

**QUIZ DETAILS:**

**a. reread the section in the book related to the material in question  
b. summarize what the book says about said topic   
c. and then state how what you wrote in the quiz is worthy of a point.  
d. you must send me a digital copy and provide a printed copy at the beginning of class.**

#### Policy on Late Projects and Exams

All written assignments are due by the beginning of class. Assignments received after the start of class will be penalized as follows:

Up to 1 day late: -10 points

2 days late: -20 points

3+ days late: 0 on the assignment

A “day” refers to the day of the week (Monday-Sunday).

**There are NO RETAKES FOR QUIZZES OR EXAMS**.

If a student is absent on the day of an assigned quiz or an exam, the student will receive a ZERO for that quiz or exam.

It is each student’s responsibility to check the course website and the e-mail address you have provided the school system on a regular basis. If you know you have sports-team or other obligations, please plan ahead accordingly.

If you find yourself falling behind because of personal, psychological, or any other reasons please come by and speak to me so that we can figure out a way to help you.

**Class Participation**

Habitual late attendance (5 minutes or more) will count as an absence. Points will also be deducted for lack of class preparedness as noted in this syllabus. 3 instances of being late to class or unprepared when the professor calls on you will count as 1 absence.

**Excusable absences are limited to GT sanctioned events, medical treatment, and death in the family**. There is a buffer (3 free absences) included in the absence policy for all the other reasons why students don’t come to class (not feeling well, interviews, etc.). Manufacturing a false excuse is a violation of the Honor Code. All excused absences must be cleared through the Office of the Dean of Students. Students are responsible for getting lecture notes from a classmate.

Each student is responsible for signing the attendance sheet; no individual can sign in for another student. If someone is caught signing in for someone else, both students will receive an absent mark.

#### Student Code of Conduct: Academic Integrity

Georgia Tech requires students to adhere to high standards of integrity in their academic work. Plagiarism and cheating will not be tolerated. All breaches of academic integrity are taken seriously. ALL assignments, quizzes, and exams are assumed to be your INDIVIDUAL effort. All papers/material submitted to this class must be original to **THIS** class, not something submitted to another class and reformatted to meet this course’s requirements. Reformatting a previous/concurrent paper to fit the current specifications is academic dishonesty and, as such, a violation of the honor code. See <http://osi.gatech.edu/index> for details.

IGNORANCE IS NOT AN EXCUSE. WHEN IN “DOUBT”---DON’T.

**“All suspected breaches of academic integrity will be reported to the Office of Student Integrity and may result in an “F” in this class.”**

As an example of identifying source materials, this syllabus and this course are heavily influenced by the material prepared by **Prof. Ron Fergusson, Prof. Alexander Petrov, Prof. Paul Thagard,** and **Dr.** **Maithlee Kunda** (I am grateful for their insights and digital guidance). The documents distributed for this course and the overheads presented will be based on materials from the course textbook.