I. Bulletin description

PSYC GU4222. The Cognitive Neuroscience of Aging (seminar). 4 pts. Mondays: 10.10 AM-12.00 PM. Room 405 SCH. Prerequisites: Courses in introductory psychology, cognitive psychology, and instructor permission.

This course is a comprehensive overview of conceptual and methodological approaches to studying the cognitive neuroscience of aging. The course emphasizes the importance of combining information from cognitive experimental designs, epidemiologic studies, neuroimaging, and clinical neuropsychological approaches to understand individual differences in both healthy and pathological aging.

II. A full description of the content of the course

Each individual class will begin with background information provided by one of the primary instructors, or a guest lecturer, followed by 1 to 2 student presentations on an article related to topic, discussion, and questions.

Session Topic and Speaker (AS AN EXAMPLE; THIS IS THE LECTURE SCHEDULE FROM 2017; Lectures will be highly similar):

9/11 Introduction (Stephanie Cosentino & Teal Eich)
9/18 Cognitive Aging overview (Anna Mackay-Brandt)
9/25 Do all cognitive functions decline in Healthy Aging? (Teal Eich)
10/2 White matter-cognition interactions in Healthy Aging (Elaine Gazes)
10/9 Functional brain networks and Cognition in Healthy Aging (Christian Habeck)
10/16 Neuropsychological testing (Stephanie Cosentino); 1 page topic proposal for final paper due
10/23 Cultural diversity and aging (Jennifer Manly)
10/30 Biomarkers of Pathological Aging (William Chuck Kriesl)
11/6 NO CLASS UNIVERSITY HOLIDAY
11/13 Overview of degenerative diseases (James Noble);
11/20 Cognitive Reserve (Yaakov Stern)
11/27 Vasculature in Aging (Adam Brickman)
12/4 Diet in Aging (Yian Gu)
12/11 Exercise as intervention in Aging (Stan Colcombe)
12/18 Final paper due by email

III. The rationale for giving the course

This course provides a comprehensive overview of conceptual and methodological approaches to studying the cognitive neuroscience of aging and is intended to introduce students to the relevance and challenges of studying the aging brain. The primary instructor as well as guest lecturers will mainly come from the interdisciplinary faculty of the Cognitive Neuroscience Division in the Sergievksy Center at Columbia University Medical Center. The course emphasizes the importance of combining information from cognitive experimental designs, epidemiologic studies, neuroimaging, and clinical neuropsychological approaches to understand individual differences in both healthy and pathological aging.

This advanced seminar is best suited to students who have completed two or more lecture courses beyond W1001, such as W1010 (Mind, Brain, and Behavior), W2210 (Cognition: Basic Processes), W2215 (Cognition and the Brain), W2220
PSYC GU4222 is an advanced seminar, designed particularly for graduate students, for advanced undergraduates who are majoring in Psychology or in Neuroscience and Behavior, and for students participating in the Postbac Psychology Program. These students will have priority in registration, followed by junior majors followed by non-majors.

It fulfills the following degree requirements:
• For Psychology Graduate Students, PSYC GU4222 will apply toward the “two seriously graded seminars” requirement of the Master’s degree.
• For the Psychology major or concentration in the College and in G. S., for the Psychology minor in Engineering, and for the Psychology Postbac, GU4222 meets the Group I (Perception and Cognition) distribution requirement.
• For the Neuroscience and Behavior joint major, GU4222 will fulfill the 5th Psychology requirement: “one advanced psychology seminar from a list approved by the Psychology Department advisor to the program.”
• For non-majors in the College and GS, GU4222 will count as one term of the natural science requirement, provided that students obtain the necessary permission and have taken the prerequisite psychology courses. Students who are majoring in Psychology or in Neuroscience and Behavior will have priority over students who are taking the course for the science requirement, and we anticipate the course will rarely be used for the latter.
• For the Psychology Postbac certificate, PSYC GU4222 will fulfill the advanced seminar requirement.
• For the Barnard Psychology major, PSYC GU4222 will fulfill the senior seminar requirement.

IV. The reading list and weekly syllabus
Each class session will be roughly organized as:
• 45 - 60 minute invited presentation
• ~30 minute student presentations
• Student led discussion of the presentation and general discussion

Readings are available as PDFs on https://courseworks.columbia.edu and are posted at least two weeks prior to the corresponding lecture date.

V. Course requirements and grading
Class Participation
As this is a seminar, it cannot be emphasized enough that active participation in class discussion is essential! This is a small class that requires a lively discussion rooted in the weekly readings in order for students to gain a deep understanding of the course materials, and the issues that pertain to studying the aging brain. Please note, attending class does not “count” for class participation, and grades can be lowered significantly by a lack of participation throughout the semester.

Questions generated by the readings
To facilitate our weekly discussions, each student is required to read ALL the assigned papers before class in order to ensure lively discussion in class (guest lecturer assigns 2-3 articles, and student presenter assigns 1 article). Additionally, for all students who are not presenting that week, each student will compose one substantive question relevant to each of the readings. These questions should be posted on Courseworks each week by Saturday 5PM. Students are not allowed to replicate already posted questions. Answering these questions contributes to your participation grade. Substantive questions are awarded more credit than straight-forward questions (e.g., why was the sample size so small?)

Discussion leadership
On the first day of class, students will sign up to give a presentations in class. Students should prepare a presentation about an article that they choose that is related to the session topic. The student-presenter must meet with (in person or via email) Dr. Cosentino (see sign up sheet) to discuss the topic and format of the presentation and to get feedback on an appropriate article to present. You should come to the meeting with at least 2 article options. You must identify the article that you will be discussing by Sunday of the week before your presentation, so that it can be posted on
**Courseworks for the rest of the class.** In addition, the student presenter should look at all of the questions posted to courseworks about their session, and be able to lead discussion about these questions. The student presenter will guide discussion during their presentation.

Evaluation of the quality and timeliness of the postings will be included in the final grade. To post, log into Courseworks for this course, click on Discussion Board, go to the appropriate lecture, and click on “Start a new conversation.” You will not be able to view others’ posts until you have posted.

**Research paper**
This should take the form of a critical review paper. The topic can be of your choosing; however it is strongly recommended that you do your paper on the topic that you will be presenting in class. You can discuss your paper with the instructor anytime during the semester, and it is required that you submit your paper idea halfway through the semester. **Specific Date TBD.** You must also meet with the instructor once, at least one month prior to the due date, for discussion. Your paper should be based not only on the assigned readings, but also on any suggested readings and a set of additional readings to be agreed upon during this meeting.

Important criteria for grading will be evidence that you are not simply outlining or regurgitating the readings, but are attempting to synthesize them, organize them around a theoretical perspective, point out areas of controversy, or suggest a novel avenue for future research. **15 pages maximum.** Any pages exceeding 15 will be disregarded. Even if the class presentation of your chosen topic is toward the end of the semester, you should begin research on your topic fairly early in the semester so that you can develop and reflect on your ideas throughout the class. The paper is due one week after the final week of class via Email. If you do not receive an email back acknowledging receipt, I did not receive it!

**Grading will be determined as follows:**

- 15% Class Participation (active discussion; answering student presenter questions)
- 20% Content and Timeliness of Posted Discussion Questions
- 30% Student Presentation / discussion and leadership during presentation
- 35% Paper