PSYC GU4222 – The Cognitive Neuroscience of Aging
Drs. Stephanie Cosentino and Teal Eich
Fall 2017

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 (subject to revision):

9/11 Introduction (Cosentino & Eich)
9/18 Cognitive Aging overview (Mackay-Brandt)
9/25 Do all cognitive functions decline in Healthy Aging? (Eich)
10/2 White matter-cognition interactions in Healthy Aging (Gazes)
10/9 Functional brain networks and Cognition in Healthy Aging (Habeck)
10/16 Neuropsychological testing (Cosentino); **1 page topic proposal for final paper due**
10/23 Cultural diversity and aging (Manly)
10/30 Biomarkers of Pathological Aging (Kriesl)
11/6 **NO CLASS UNIVERSITY HOLIDAY**
11/13 Overview of degenerative diseases (Nobel);
11/20 Cognitive Reserve (Stern)
11/27 Vasculature in Aging (Brickman)
12/4 Diet in Aging (Gu)
12/11 Exercise as intervention in Aging (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 instructors as well as guest lecturers will 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 (Cognition: Memory and Stress), or W2480 (Developing Brain). It will complement seminar offerings in cognitive neuroscience, and provide an important developmental component to students' training.

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
- 20-30 minute (each) student presentations
- Discussion of the presentation and student questions

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

Questions generated by the readings

Each student is required to read ALL the assigned papers (guest lecture (2-3) articles and student presenter articles (2 max) before class in order to ensure lively discussion in class. Each student will also be responsible for composing one substantive question relevant to each of the readings and posting their questions on Courseworks each week **by Saturday 5PM**. Students are not allowed to replicate already posted questions. The student presenter will ask non-presenters to answer 2-3 of these questions in class. This means that all students must prepare answers for all questions! Answering these questions contributes to your participation grade.

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. Eich or Cosentino (see sign up sheet) to discuss the topic and format of the presentation and to get feedback on an appropriate article to present. We recommend that you come to the meeting with at least 2 article options. **You must email us with the article that you will be discussing by Sunday of the week before your presentation, so that we can post it 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 then choose 2-3 of these questions, and call on students in the class to answer them after or during their presentation. 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 we strongly recommend that you do your paper on the topic that you will be presenting in class. Although you can discuss your paper with one of the instructors anytime during the semester, it is required that you **submit your paper idea Oct. 16**. and meet with an 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 and most importantly, suggest a novel perspective or 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 on 12/18 via Email. We will send acknowledgments of receipt. If you do not receive an email back from us acknowledging receipt, we didn't receive it!**

Class Participation
Active participation in class discussion is essential to gaining a full understanding of the course materials. Absences from class will cause you to lose up to 10% total from the final course grade. This will encourage you to come to class.

Bonus Points. After each class, there will be a short quiz posted on Courseworks, asking a question that will be easy to answer if you were in class. These quizzes will be worth ¼ of a percent each, enabling you to raise you grade by a maximum of 3.25% (e.g, if your final grade in the class is an 87%, and you have correctly answered all 13 of the quizzes, your grade will be bumped to a 90.25%). These quizzes are designed to encourage you to be active and pay attention in class. Sharing of the answers with fellow classmates is not permitted. The quiz will be open until 5PM on Tuesday each week (leaving you more than 24 hours to respond).

Grading will be determined as follows:

10%	Class Participation (active discussion; answering student presenter questions)
20%	Content and Timeliness of Posted Discussion Questions
35%	Student Presentation / discussion and leadership during presentation
35%	Paper