SYLLABUS for HDE 100C - Honors, Winter 2017  [version 1/03/2017]
Adult Development and Aging, with emphasis on successful mind & brain aging
Professor Beth A. Ober
Class sessions: Mondays & Wednesdays, 12:10-2:00, 108 Hoagland Hall
Ober's Office Hours: Tuesdays 4:10-5:00pm, Wednesdays 2:30-3:30, & by appt.

REQUIRED READINGS:
(1) selected chapters from Bjorklund, B. (2015). The Journey of Adulthood (8th edition), Pearson Education, Inc. Three or four copies of this textbook are on reserve at Shields Library; used copies are available for purchase at UCD Bookstore and at Amazon.com. The previous edition (7th, 2011) of this book, is also acceptable.
(2) additional readings, from multiple sources, as listed on the syllabus; these will all be posted on CANVAS, as PDF files

COURSE SCHEDULE:

MODULE 1, January 9 & 11: Overview & introductory materials
- Overview of course organization and goals
- Theoretical principles of lifespan human development
- Methods for studying lifespan human development
- Global aging; normal versus abnormal brain and cognitive aging

Readings for January 9:

Readings for January 11:

UCD HOLIDAY, January 16 (Mon.): NO CLASS

MODULE 2, January 18 & 23: Biological Foundations
- Biological theories of aging
- Brain changes associated with normal vs. abnormal aging

Readings for January 18:
Discussion Questions for January 18:

1. Which of the "programmed" theories of aging (changes in gene expression that follow a biological timetable) have more versus less empirical support and why?

2. Which of the "damage or error" theories of aging (environmental assaults that induce cumulative damage over time) have more versus less empirical support and why?

Readings for January 23:

Discussion Questions for January 23:
Which of the many extant theories of biological aging can help to explain aging-related (normal vs. abnormal) brain changes?

- a. structural brain changes
- b. functional brain changes

MODULE 3, January 25 & 30: Physical activity and successful aging

- Correlational (observation-based) versus causal (experiment-based) data
- Evidence for structural and/or functional brain changes as a function of physical activity
- Evidence for memory and/or other cognitive changes as a function of physical activity
- Proposed mechanisms for the effects of physical activity on brain and cognition
- Limitations and future directions

Readings for January 25:

Readings for January 30:
2) Lovden et al. (2013). Structural brain plasticity in adult learning and development. Neuroscience and Biobehavioral Reviews, 37, 2296-2310. [please be sure to read section 2.2, and "study" Figure 2 (top of p. 2301); the rest of this journal article may just be skimmed]

Presentations of Group Projects in Class, February 1, based on these questions:

1. Which aspects of brain structure seem to benefit from physical activity? Moreover, which types of physical activity seem to be most effective?
2. Which aspects of brain function seem to benefit from physical activity? Moreover, which types of physical activity seem to be most effective?

3. Which types of physical activity seem to improve cognition? Which specific types of cognition (i.e., which types of memory, attention, executive function, etc.) seem to be improved?

4. What might be the mechanisms by which certain types of physical activity can improve cognition, via improvements in brain function and/or structure?

5. How strong (vs. weak) is the evidence for physical activity playing a causal role in delaying the onset of deficits in brain and/or mind functioning (e.g., onset of MCI and/or dementia) in older adults?

Midterm Exam #1: February 6 (Mon), at beginning of class session

MODULE 4, February 6 & 8: Cognitive Foundations
- General cognitive functioning
- Memory functioning: Working, Episodic, Semantic, Procedural
- Linkages of memory functioning to brain changes

Readings for February 6:

Discussion Questions for February 6:
1. Which aspects of general cognitive functioning show declines in normal aging and which are preserved?
2. What about abnormal aging (e.g., Alzheimer's disease).
3. How do changes in general cognitive functioning align with the changes in brain structure and function (in normal vs. abnormal aging) that we discussed earlier in the quarter?

Readings for February 8:

Please download the PDF from this link --
http://ucanr.edu/repositoryfiles/ca6404p174-79314.pdf

Discussion Questions for February 8:
1. Which aspects of memory functioning show declines in normal aging and which are preserved?
2. What about abnormal (especially AD) compared to normal aging?
3. How do changes in memory functioning align with the changes in brain structure and function (in normal vs. abnormal aging) that we discussed earlier in the quarter?
February 10 (Fri): **PAPER TOPIC & OUTLINE DUE on CANVAS, 6:00pm**

**MODULE 5**, February 13 & 15: Cognitive activity and successful aging
- Correlational (observation-based) versus causal (experiment-based) data
- Issues regarding transfer (near vs. far) to untrained cognitive abilities
- Issues regarding duration of training-related improvements
- Issues regarding ethics of commercial, computer-based "brain-training" program
- Superagers' mind and brain: differences from normal older adults

Readings for February 13:

Readings for February 15:

**UCD HOLIDAY, February 20 (Mon.): NO CLASS**

➢ **Presentations of Group Projects in Class, February 22**, based on these questions:

1. What types of cognitive training tasks show promise for improving **overall cognitive** outcomes in aging? How and why? Be sure to discuss issues related to transfer to non-trained tasks/abilities?

2. What type of cognitive training tasks show promise for improving **memory** functioning in aging? How and why? Be sure to discuss issues related to transfer to non-trained tasks/abilities?

3. How do the various types of training (e.g., in-person, online, "real-world" activity) compare in terms of outcomes and durability?

4. Is it possible that cognitive training tasks (especially computerized tasks) in young and/or middle adulthood could have an impact on cognitive functioning in late adulthood? What might be the mechanisms for this?

**Midterm Exam #2: February 27** (Mon), at beginning of class session

**MODULE 6**, February 27: Socio-emotional foundations
- Social relationships & social support
- Linkages between social support and health
- Socioemotional Selectivity Theory (SEST) & aging-related positivity effects

Readings for February 27:

Discussion Questions for February 27:
1. What is the evidence for beneficial effects of social networks/support on physical health?
2. What is the evidence for beneficial effects of social networks/support on mental/emotional health and well-being?
3. What are the strengths versus limitations of SEST for explaining social aspects of adult development and aging?
4. What are the strengths versus limitations of the SEST for explaining cognitive aspects of aging?

MODULE 7, March 1 & 6: Social activity and successful aging
- Correlational (observation-based) versus causal (experiment-based) data
- Effects of social engagement/support (direct and indirect) on cognition
- Effects of social engagement/support (direct and indirect) on brain structure/function
- Issues regarding multidimensional aspects of social activity (i.e., involvement of physical and cognitive activity, as part of social activity)
- Impact of social engagement/support on mood, depression, stress, etc., which, in turn, can have effects on cognition and brain
- How the consideration of the principles of SEST could play a role in the design and implementation of social engagement studies.

Readings for March 1:

Discussion Questions for March 1:
1. What are the strengths versus limitations (including "gaps") regarding evidence for beneficial effects of social activity/support on cognitive function?
2. What are the strengths versus limitations (including "gaps") regarding evidence for beneficial effects of social activity/support on brain function?

Readings for March 6:

Discussion Questions for March 6:
1. How do the readings for this class session enhance (in comparison to the readings for the previous class session) our understanding of issues related to the effects of social activity/support on successful aging of mind and brain?
2. Relatedly, what are some potential mechanisms by which cognitive and social activity are interactive in their influence on mind and brain aging?

➢ **Presentations of Group Projects, in Class, March 8** (Wed), based on these questions:

What might be some of the neuro-psychosocial pathways by which social engagement can support/improve cognitive and/or brain function?
- 1. Specifically, how might immune function (and thus resistance to diseases that can affect the brain) be affected?
- 2. Specifically, how might behavioral compensation mechanisms be affected?
- 3. Specifically, how might neuroplasticity (i.e., brain compensation/neuroplasticity) be affected?
- 4. Specifically, how might mood and/or life-satisfaction be affected, which in turn could support/improve cognitive and/or brain function?

**Midterm Exam #3: March 13** (Mon), at beginning of class session

**MODULE 8, March 13 & 15:**
Putting it all together: class's recommendations for successful aging of mind & brain

Readings for March 13 & 15:
INDIVIDUAL RESEARCH PAPERS DUE Friday, March 17, 6:00pm, via CANVAS
These papers will be 6.5 - 7.5 pages (double-spaced) in length and will be on a pro versus con research topic, to be approved by Prof. Ober, by the end of the 5th week of instruction.

FINAL EXAM (cumulative), Thursday, March 23, 8:00-10:00am

Grading Rubric for Course
In-Class Participation: 11%
Group Presentations (3% x 3): 9%
Online Participation, via Threaded Discussions (1% x 8): 8%
Individual Research Paper: 22%
Midterm exams (10% x 3): 30%
Final exam: 20%
TOTAL = 100%, with letter grades assigned in standard manner

"Quick List" of Class Dates linked to Modules/Group Presentations/Exams/etc.
January 9 (Mon): Module 1
January 11 (Wed): Module 1
January 16 (Mon): UCD HOLIDAY - no class
January 18 (Wed): Module 2
January 23 (Mon): Module 2
January 25 (Wed): Module 3
January 30 (Mon): Module 3
February 1 (Wed): Presentation of Group Projects on Physical Activity
February 6 (Mon): Midterm #1, beginning of class; Module 4
February 8 (Wed): Module 4
February 10 (Fri): PAPER TOPIC & OUTLINE DUE on CANVAS, 6:00pm
February 13 (Mon): Module 5
February 15 (Wed): Module 5
February 20 (Mon) UCD HOLIDAY - no class
February 22 (Wed): Presentation of Group Projects on Cognitive Activity
February 27 (Mon): Midterm #2, beginning of class; Module 6
March 1 (Wed): Module 7
March 6 (Mon): Module 7
March 8 (Wed): Presentation of Group Projects on Social Activity
March 13 (Mon): Midterm #3, beginning of class; Module 8
March 15 (Wed): Module 8
March 17 (Friday): PAPER DUE on CANVAS, 6:00pm
March 23 (THURS): Final Exam, 8:00-10:00am