



Dana and David Dornsife
College of Letters, Arts
and Sciences

Department of Psychology

| | |
|-------------------------------|--|
| Course ID and Title: | PSYC 506 Learning and Cognition |
| Prerequisites: | Instructor Permission |
| Semester and day/time: | Fall 2018, Tue 2:00 PM-5:50 PM |
| Classroom: | VKC 108 |
| Professor: | Antoine Bechara |
| Office: | HNB, B26 |
| Office hours: | by appointment |
| e-mail: | bechara@usc.edu |

Course Description

Human cultures have devised programs to promote the mind's rational and creative abilities. Those programs are collectively called *education*. However, education can take several forms. Some come from self-education and personal apprenticeship. Other forms come from formal curricula such as those acquired in schools and universities. However, a common denominator to all those forms of learning is the human mind. This course seeks to cover the modern principles of learning and gain a deeper understanding of the nature and operation of the human mind, with the goal to help people become lifelong learners. This class will cover the fundamental and theoretical concepts, along with empirical evidence, for several learning and cognitive theories, including metacognition, attention, working memory, long-term memory, knowledge representation, thinking and reasoning, decision-making, and intelligence. **The neurobiological processes related to each of these concepts are introduced at every opportunity.**

Teaching Objectives

- Provide the appropriate neuroscience background for the cognitive concepts that are involved in learning.
- Provide the appropriate theoretical background of cognitive psychology specifically for complex learning and thinking processes.
- Provide a broad spectrum of educationally relevant topics in the field of learning and cognition.

Learning Objectives

After successfully completing this course, students should be able to:

- Have an understanding about the workings of the mind. If education is intended to develop the mind's capability, then only through a deep understanding of the workings of the mind that one could chart an optimal course for its development.
- Have an understanding of how education can be made more effective so that current and future learners will be more capable than those of the past.

Prerequisite(s)

No prerequisites for graduate students. Undergraduates in senior year are allowed to enroll with instructor permission. No specific pre-requisites required, but priority is given to graduate students.

Co-Requisite (s)

None

Concurrent Enrollment

None

Recommended Preparation

None.

Course Notes

Course syllabus, slides from presentations in class, and reading assignments will be posted on Blackboard as the course progresses.

There is a collection of articles and reading assignments that are published in a book: Learning and Cognition in Education (see below). PDFs of these articles will be posted on Blackboard. For each presentation (i.e., chapter) from this book, the student is encouraged to look up a peer reviewed empirical study, which investigates the learning and cognitive construct presented in the chapter. All PDFs will be posted on Blackboard. Each student will make 3 presentations from this book supplemented by relevant peer reviewed articles from the literature.

Finally, slides that the course instructor will use in class in the form of lectures to cover some of the relevant topics will also be posted on Blackboard and accessible to registered students.

Attendance and Student Responsibilities

Students are held responsible for all topics covered in class. Students are also responsible for all announcements or schedule changes that are made in class. Students are expected to attend classes regularly, provide input about the daily topic, and ask questions. There will be three required articles (chapters) for everyone to read for each class session.

Technological Proficiency and Hardware/Software Required

NA

Required Readings and Supplementary Materials

There is no required textbook for the course, but the assigned articles will come from the following Edited book:

Learning and Cognition in Education. Editor: Vibeke Grover Aukrust, 2011.

The instructor slides will follow materials mostly taken from two textbooks:

1. Learning and Cognition: The Design of the Mind. Michael E Martinez, 2010.

2. Cognitive Neuroscience: The Biology of the Mind. Editors: Gazzaniga, Ivry, Mangun. 4th Edition, 2014.

Additional supplementary articles will be searched by students and shared with classmates. All class materials, including lecture slides presented in class, will be posted on Blackboard and accessible to registered students.

Description and Assessment of Assignments

The course will include (1) three presentations by each student throughout the course and leading the class discussion. For each presentation, the student will make a power point presentation. Each student presentation should consume 45 minutes (including questions and discussion). In the 45 minutes, the student should provide critical thought, analysis, and synthesis of the material. Other students should be engaged in the discussion, and the presenting student will lead the discussion in class; (2) there are assessments of participation in

class discussions for all non-presenting students; (3) there will be one final exam only on the slides presented by the course instructor in each class.

1. Student presentations and leading class discussion: Each student will be asked to make three presentations during the course and lead the class discussion on a topic from the list of classes provided below. This presentation should include:

- a) A clear presentation of the key concepts discussed in the article. The presentation of the article should teach the rest of the class the concepts of the article. The use of additional primary research articles, teaching aids (e.g., figures, videos, etc.) is encouraged.
- b) During the presentation, the student is expected to stimulate class discussion about the significance of the presented findings.

The student will be evaluated based on the overall assessment of the extent to which the presentation is clear, concise, organized, and reflects an understanding of both assigned course readings, and perhaps the student's own independent investigation of the literature on the topic. The grade will also reflect the extent to which the student is able to engage the class in a deep and useful discussion, and answer questions posed by other students in a thoughtful and responsive manner.

During the first week, students will be assigned the dates of their presentations. The order of selecting students will follow the alphabetical order of their last name. However, there is flexibility in that students could swap the date of their presentation after informing the course instructor.

2. Participation in class discussion: Each student (except the presenter) is expected to read the assigned articles/chapters and write two questions (to be asked in class to the presenter) that relate to one or two of the three assigned readings for the class. Evaluation is based on the quality of comments, and engagement in discussions of each class presentation. High quality contributions will reflect both a depth and breadth of knowledge gained from the assigned readings, and they should be clearly stated and effectively communicated, and they also should be insightful and relevant to the issues under discussion.

3. A final exam: This will have short answers or short paragraphs format. Questions will be based on the slides presented by the instructor in his lectures. You are not responsible for the slides presented by students in class. All exam questions will be based on information presented and discussed in class, and not on any outside materials.

Grading Breakdown

The final grade in the course will be based on the following weights:

| | |
|--|-----|
| Class presentation/discussion leadership 1 | 20% |
| Class presentation/discussion leadership 2 | 20% |
| Class presentation/discussion leadership 3 | 20% |
| Participation in class discussion | 20% |
| Final exam | 20% |

| | |
|--------------------|-------------|
| Final Grade | 100% |
|--------------------|-------------|

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, *Behavior Violating University Standards*<https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Course Schedule: A Weekly Breakdown

| | Topics/Weekly Activities | Readings and Homework | Deliverable/ Due Dates |
|--|--|---|---|
| Week 1 Date: 01/14/20 Instructor Lecture: | -Course Introduction -Behaviorism | Lecture slides on Blackboard | Participate in class questions and discussions. |
| Week 2 Date: 01/21/20 Instructor Lecture: Student Presentations: <u>Learning and Cognition:</u> <u>Cognition and Learning:</u> <u>Theory:</u> | The Brain and Cognition (1) 1. Neuroscience Bases of Learning. 2. Learning in a cross-cultural Perspective 3. Connectionism and Learning | Lecture slides on Blackboard Chapter 2 Chapter 3 Chapter 4 | Participate in class questions and discussions. |
| Week 3 Date: 01/28/20 Instructor Lecture: Student Presentations: | The Brain and Cognition (2) 1. Self-Regulated Learning and Socio-Cognitive Theory. 2. Vygotsky and Recent Developments 3. Theoretical Bases of Computer Supported Learning. | Lecture slides on Blackboard Chapter 5 Chapter 6 Chapter 7 | Participate in class questions and discussions. |

| | | | |
|---|---|---|--|
| <p>Week 4 Date: 02/04/20</p> | <p>Instructor Lecture: Student Presentations:</p> <ul style="list-style-type: none"> The Cognitive Architecture 1: Memory. 1. Personal Epistemology in Education. 2. Learning in a Sociocultural Perspective. 3. Situative View of Learning. | <p>Lecture slides on Blackboard Chapter 8 Chapter 9 Chapter 10</p> | <p>Participate in class questions and discussions.</p> |
| <p>Week 5 Date: 02/11/20</p> | <p>Instructor Lecture: Student Presentations: <u>Cognition: Recent Trends</u></p> <ul style="list-style-type: none"> The Cognitive Architecture 2: Perception and attention. 1. Attention in Cognition and Early Learning. 2. Cognition and Emotion. 3. Memory. | <p>Lecture slides on Blackboard Chapter 11 Chapter 12 Chapter 13</p> | <p>Participate in class questions and discussions.</p> |
| <p>Week 6 Date: 02/18/20</p> | <p>Instructor Lecture: Student Presentations:</p> <ul style="list-style-type: none"> Theories of Knowledge (1): Language and reading; Concept understanding. 1. Intelligence. 2. Concept Learning. 3. Problem Solving and Human Expertise. | <p>Lecture slides on Blackboard Chapter 14 Chapter 15 Chapter 16</p> | <p>Participate in class questions and discussions.</p> |

| | | | |
|--|--|--|---|
| Week 7 Date: 2/25/20 Instructor Lecture: Student Presentations: | Theories of Knowledge (2): Transfer; Culture (situated cognition); Gesture; Collaboration 1. Problem Solving and Reasoning. 2. Knowledge Domains and Domain Learning. 3. Metacognition. | Lecture slides on Blackboard Chapter 17 Chapter 18 Chapter 19 | Participate in class questions and discussions. |
| Week 8 Date: 3/3/20 Instructor Lecture: Student Presentations: <u>Learning: Recent Trends</u> | Complex Cognition: Metacognition; Problem solving and reasoning 1. Learning Strategies. 2. Technology and Learning. 3. Learning as Inquiry. | Lecture slides on Blackboard Chapter 20 Chapter 21 Chapter 22 | Participate in class questions and discussions. |
| Week 9 Date: 3/10/20 Instructor Lecture: Student Presentations: <u>Learning: Language, Reading, and Writing</u> | The neuroscience of language: aphasia, alexia, agraphia 1. Co-Operative Learning. 2. Language and Literacy in Educational Settings. 3. Neuroscience of Reading. | Lecture slides on Blackboard Chapter 23 Chapter 24 Chapter 25 | Participate in class questions and discussions. |

| | | | |
|--|---|--|---|
| Week 10 Date: 3/24/20 Instructor Lecture: Student Presentations: | The asymmetry of cognitive functions: Handedness and lateralization. 1. Learning to Read. 2. Reading Comprehension: Reading for Learning. 3. First Language Acquisition. | Lecture slides on Blackboard Chapter 26 Chapter 27 Chapter 28 | Participate in class questions and discussions. |
|--|---|--|---|

| | | | |
|--|---|--|---|
| Week 11 Date: 3/31/20 Instructor Lecture: Student Presentations: | Emotion, motivation, and volition. 1. Second Language Learning. 2. Writing Early. 3. Writing Advanced. | Lecture slides on Blackboard Chapter 29 Chapter 30 Chapter 31 | Participate in class questions and discussions. |
|--|---|--|---|

| | | | |
|---|---|--|---|
| Week 12 Date: 4/7/20 Instructor Lecture: Student Presentations: <u>Learning in Contexts and Throughout the Ages:</u> | Cognitive development through the life span 1. Gender and Schooling. 2. Organizational Learning. 3. The Adult Development of Cognition and Learning. | Lecture slides on Blackboard Chapter 32 Chapter 33 Chapter 34 | Participate in class questions and discussions. |
|---|---|--|---|

| | | | |
|--|--|--|---|
| Week 13 Date: 4/14/20 Instructor Lecture: Student Presentations: | Intelligence (cognitive vs emotional) 1. Lifelong Learning. 2. Classroom Discourse and Student Learning. 3. Learning Outside of School. | Lecture slides on Blackboard Chapter 35 Chapter 36 Chapter 37 | Participate in class questions and discussions. |
|--|--|--|---|

| | | | |
|---------------------------------|---|------------------------------|---|
| Week 14 Date: 4/21/20 | | | |
| Instructor Lecture: | Social cognition, consciousness, free will and the law (1). | Lecture slides on Blackboard | Participate in class questions and discussions. |
| Student Presentations: | 1. TBA 2. TBA 3. TBA | TBA TBA TBA | |

| | | | |
|---------------------------------|---|------------------------------|---|
| Week 15 Date: 4/28/20 | | | |
| Instructor Lecture: | Social cognition, consciousness, free will and the law (2). | Lecture slides on Blackboard | Participate in class questions and discussions. |
| Student Presentations: | 1. TBA 2. TBA 3. TBA | TBA TBA TBA | |
| FINAL Date | TBA | | Date: For the date and time of the final for this class, consult the USC <i>Schedule of Classes</i> at www.usc.edu/soc . |

List of Potential Journals in Cognitive Psychology From Which You Could Choose Papers For Your Presentations

Aging, Neuropsychology, & Cognition
 Applied Cognitive Psychology
 Bilingualism: Language and Cognition
 Brain and Cognition
 Brain and Mind
 Cerebral Cortex
 Cognition

Cognition and Emotion
Cognition and Instruction
Cognitive Brain Research
Cognitive Development
Cognitive Linguistics
Cognitive Neuropsychology
Cognitive Psychology
Cognitive Science: A Multidisciplinary Journal
Consciousness and Cognition
Creativity Research Journal
European Journal of Cognitive Psychology
Human Brain Mapping
Intelligence
Journal of Applied Research in Intellectual Disabilities
Journal of Artificial Intelligence Research
Journal of Behavioral Decision Making
Journal of Cognition and Development
Journal of Cognitive Neuroscience
Journal of Creative Behavior
Journal of Experimental Psychology: General
Journal of Experimental Psychology: Learning, Memory, and Cognition
Journal of Mind and Behavior
Language & Cognitive Processes
Language Learning and Development
Learning & Individual Differences
Learning & Memory
Memory
Memory & Cognition
Psychological Science
Social Cognition
Thinking & Reasoning
Trends in Cognitive Sciences
Visual Cognition