

Course Syllabus
MIND, BRAIN, AND BEAUTY
Mini Term I: June 26th – July 7th, 2017

Course #: AS.360.116.71
Professor: Dr. Mónica López-González
Class meetings: MTWThF 10:00-11:30AM

Course credit: 1
Email: mlopezgonzalez@jhu.edu
Classroom: TBA

1 Course Description

What underlies our perception of visual art and music? Do specific properties of objects, scenes, and musical events evoke consistent emotional responses? Does the perception of beauty lie in the eye of the beholder? What can the creative, artistic process tell us about the mind/brain? Examining such questions from Cognitive and Computer Sciences, Neuroscience, Psychology and Philosophy, we will explore relevant research, theory and data in the visual and auditory domains as they pertain to art perception and cognition, creativity, and artificial intelligence. Students will complete a short research project proposal on the topic of their choice.

2 ASSIGNMENTS

Readings: At least one reading is assigned for each class. Readings are all available through Blackboard. All listed readings are required (except otherwise mentioned in class) and should be read by the day they appear in the schedule below (e.g. read Kandel – CH 5 (2012) by 07/05/2017).

In-class participation: This is an intense lecture, discussion, and research project proposal writing-based class. Participation is strongly encouraged. Much of the research that is discussed in this course exemplifies the frontier of this subdomain. There is much to say and contribute to each topic we discuss. Attendance to class is mandatory.

In-class write-ups: There will be a total of four (4) in-class write-ups (two (2) each week) to assess your understanding of the current course material.

Final project proposal: You will write a short research project proposal on a topic of your choice integrating any of the theories, experimental methodologies, and/or concepts discussed in class. The expectations for this assignment will be outlined in class. You are allowed, and encouraged, to discuss the material with other members of the class. However, *you must write your own ideas, arguments, hypotheses, experiments, etc. in your own words.* If you are unsure about how to properly cite references, please review the references listed at the end of this document and/or ask. The proposal must be written on a word processor; handwritten work will **not** be accepted. You will present your proposal the last day of class.

Grades: Grades will be determined by the following breakdown:

Class attendance, preparation, and in-class verbal participation (40%)
In-class write-ups (15%)
Final research project proposal (35%)
Final research project proposal presentation (10%)

3 DAILY SCHEDULE OF READINGS AND DUE DATES

Day 1 (Monday June 26, 2017): Introduction – Studying the Mind/Brain

Reading 1: Kandel (2012) – CH 5

Day 2 (Tuesday June 27, 2017): Knowing vs. Seeing

Reading 2: Gombrich (1956)

Reading 3: Shimamura (2012)

Day 3 (Wednesday June 28, 2017): Anatomy, Physiology, & Perception

Reading 4: Livingstone (1988)

Day 4 (Thursday June 29, 2017): Art, Illusion, Beauty, & the Visual System

Reading 5: Solso (1996) – CH 5

Reading 6: Solso (1996) – CH 7

Reading 7: Kandel (2012) – CH 23

Day 5 (Friday June 30, 2017): Art and the Diseased Brain

Reading 08: Chatterjee (2004)

Reading 09: Miller & Miller (2012)

Day 6 (Monday July 3, 2017): Anatomy, Physiology, Evolution, & Music

Reading 10: Purves *et al.* (2008)

Reading 11: Cross (2014)

Day 7 (Tuesday July 4, 2017): NO CLASS

Day 8 (Wednesday July 5, 2017): Emotion & Music

Reading 12: Dalgleish (2004)

Reading 13: Blood *et al.* (1999)

Reading 14: Thompson (2009)

Reading 15: Cohen (2013)

Day 9 (Thursday July 6, 2017): Music, Neuroplasticity, Creativity, & AI

Reading 16: López-González (2015)

Reading 17: Galarza *et al.* (2014)

Reading 18: <http://nautil.us/issue/20/creativity/brain-damage-saved-his-music>

Reading 19: <http://www.gizmag.com/creative-artificial-intelligence-computer-algorithmic-music/35764/>

Reading 20: <http://www.bbc.com/future/story/20140808-music-like-never-heard-before>

Day 10 (Friday July 7, 2017): Student Presentations

4 Supplementary Material and Getting Help

The material covered in this course is, by nature, interdisciplinary. It is unlikely that you will be familiar with everything that is discussed by these authors.

I am here to help you; I want every student to get as much out of the course as possible. If you are having any sort of problem, please get in touch with me. If something is not clear to you from a class reading, please ask questions in class, and/or come ask me about it outside of class. If you want to learn more about any of the topics considered, I can often refer you to appropriate readings or other sources.

5 Academic and Student Codes of Conduct

Please see the handbook for Academic Ethics and Student Life Policies at JHU here:

<http://e-catalog.jhu.edu/undergrad-students/student-life-policies/>

6 References

- Blood, A. J., Zatorre, R. J., Bermudez, P. & Evans, A. C. (1999). Emotional Responses to Pleasant and Unpleasant Music Correlate with Activity in Paralimbic Brain Regions. *Nature Neuroscience*, 2(4): 382-387.
- Chatterjee, A. (2004). The Neuropsychology of Visual Artistic Production. *Neuropsychologia*, 42(11), 1568-83.
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- Cross, I. (2014). Music and Communication in Music Psychology. *Psychology of Music*, 42(6) 809-819.
- Dalgleish, T. (2004). The Emotional Brain. *Nature Reviews*, 5, 582-589.
- Galarza, M., Isaac, C., Pellicer, O., Mayes, A., Broks, P., Montaldi, D., Denby, C., & Simeone, F. (2014). Jazz, guitar, and neurosurgery: the Pat Martino case report. *World Neurosurgery*, 81(3), 651-e1.
- Gombrich, E. H. (1956). From Light into Paint. In the A. W. Mellon Lectures in the Fine Arts, *Art and Illusion: A Study in the Psychology of Pictorial Representation* (pp. 33-62). National Gallery of Arts, Washington: Princeton University Press.
- Kandel, E. R. (2012). Ch. 5: Exploring Mind Together with the Brain: The Development of A Brain-Based Psychology. In *The Age of Insight* (pp. 48-62). New York: Random House.
- Kandel, E. R. (2012). Ch. 23: The Biological Response To Beauty and Ugliness in Art. In *The Age of Insight* (pp. 378-393). New York: Random House.
- Livingstone, M. S. (1988). Art, Illusion and the Visual System. *Scientific American*, 258(1), 78-85.
- López-González, M. (2015). Cognitive Psychology Meets Art: Exploring Creativity, Language, and Emotion Through Live Musical Improvisation in Film and Theatre.

Proceedings of SPIE 9394, Human Vision and Electronic Imaging XX, 939403 (March 17, 2015); doi: 10.1117/12.2083880.

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- Purves, D., Brannon, E. M., Cabeza, R., Huettel, S. A., LaBar, K. S., Platt, K. S., et al. (2008). Perception of Auditory Stimuli. In *Principles of Cognitive Neuroscience* (pp. 147-173). Sunderland, MA: Sinauer Associates, Inc.
- Shimamura, A. P. (2012). Towards a Science of Aesthetics: Issues and Ideas. In A. P. Shimamura & S. E. Palmer (Eds.), *Aesthetic Science: Connecting Minds, Brains, and Experience* (pp. 3-28). New York: Oxford University Press.
- Solso, R. L. (1996). *Cognition and the Visual Arts*. Cambridge, Massachusetts: A Bradford Book, The MIT Press.
- Thompson, W. F. (2009). Music and Emotion. In *Music, Thought, and Feeling: Understanding the Psychology of Music* (pp. 119-150). New York: Oxford University Press.