**CTP 311 Human Visual Cognition (인간의 시각 인지)**

**Instructor Information**

Jeongmi Lee, Ph.D. (이정미) Email: [jeongmi@kaist.ac.kr](mailto:jeongmi@kaist.ac.kr)

Office: N5, #2338 Phone: 042-350-2929

Office hour: by appointment

**Teaching Assistant**

Eugene Hwang (황유진) Email: [gomsing@kaist.ac.kr](mailto:gomsing@kaist.ac.kr)

**Lecture Location/Time**

N25 #3239 / Mondays and Wednesdays 10:30am - 12:00pm

**Course Objectives**

The objective of this course is to understand the fundamental principles of how humans process, transform, and experience visual information. It introduces the mechanisms of human visual information processing by combining multidisciplinary knowledge from cognitive psychology, vision science, and cognitive neuroscience. In addition, research methods and designs commonly used in human cognitive research will be addressed.

**Recommended References and Readings**

- Palmer, S. E. (1999). *Vision Science.* MIT press: Cambridge, MA.

- Gazzaniga, M. S., Ivry, R. B., & Mangun, G. R. (2014). *Cognitive Neuroscience (4th Ed.)*. W. W. Norton & Company: New York, NY.

- All of the lecture materials and other supplemental research papers will be provided online throughout the semester.

**Paper Seminar**

This course will be held in the combined format of a lecture and a seminar. To this end, the instructor will provide a lecture on the given topic first, and then a student will present a related research paper and lead discussions. Each student is responsible for 1) selecting a research paper relevant to the given topic (notify the selected paper **at least 1 week before** the seminar), 2) presenting the paper, and 3) leading discussions based on the paper critiques written by other students (see below).

**Paper Critique**

An important skill to develop in this class is how to critically evaluate a research paper. Before each paper seminar, every student (except for the student responsible for the paper seminar) should read the selected research paper, and submit a brief critique (no more than one-page).

The paper critique should **not** just be a **summary** of the paper. Instead, the critique should focus on the **questions, issues, opinions, evaluations, or ideas** you had while reading the paper (E.g., Does it address an important question?, Is there anything confusing or ambiguous?, Is it well organized and clearly written?, Are you convinced with the results and conclusions?, Is the research method appropriate for the question? Different or better methodologies? Limitations or alternative explanations?, Any idea for future studies or applications?, etc.). (Due by **Sunday midnight** before the seminar).

**Quizzes**

There will be four online open-book quizzes covering the lecture materials. (Due by **Sunday midnight)**

**Written Research Proposal and Presentations**

Each student will be required to write a research proposal that involves investigating human visual cognition and/or the application. It should provide a clear statement of the research question of interest, a review of relevant literature, how the literature relates to your study, hypotheses, detailed research methods designed to examine that question, and the data analyses you intend to conduct. Each student will deliver an **interim presentation** outlining the plans for the proposal, and get feedback from other students and the instructor (Week12). The **final presentation** and the **written research proposa**l is due in the last week of class.

**Grading**

Attendance: 10%, Paper seminar: 10%, Paper critique: 20%, Quizzes: 20%, Written research proposal and presentations: 40%

**Course Schedule**

|  |  |
| --- | --- |
| **Week** | **Topic** |
| 1  (3/16, 18) | Introduction and overview |
| 2  (3/23, 25) | Optics and Human visual system |
| 3  (3/30, 4/1) | Theories of vision |
| 4  (4/6, 8) | Research methods in human visual cognition-1 (Quiz 1) |
| 5  (4/13, 15) | Research methods in human visual cognition-2  4/15: No class (election day) |
| 6  (4/20, 22) | Color vision |
| 7  (4/27, 29) | Depth perception  4/29: : Paper seminar (Color vision) |
| 8  (5/4, 6) | Midterm: No class (Quiz 2) |
| 9  (5/11, 13) | Organizing objects and scenes  5/13: Paper seminar (Depth perception) |
| 10  (5/18, 20) | Perceiving object properties and parts  5/20: Paper seminar (Organizing objects and scenes) |
| 11  (5/25, 27) | Perceiving function and category  5/27: Paper seminar (Perceiving object properties and parts) |
| 12  (6/1, 3) | Interim research proposal presentation (Quiz 3) |
| 13  (6/8, 10) | Perceiving motion and events  6/10: Paper seminar (Perceiving function and category) |
| 14  (6/15, 17) | Visual attention  6/17: Paper seminar (Perceiving motion and events) |
| 15  (6/22, 24) | Final research presentation (Quiz 4) |
| 16  (6/29, 7/1) | Final week: No class (written research proposal due) |