

# Cognitive Science MA Program, Boğaziçi University

## Topics:

- The definitions, aims and subfields of cognitive science
- Dominant paradigms of cognitive science
- Research methods of cognitive science
- History of milestones in cognitive science
- Artificial intelligence
  - Knowledge representation
  - Language processing
  - Learning and pattern recognition
- Philosophy
  - Philosophy of mind
  - Rationality
- Psychology
  - Cognitive psychology
  - Attention
  - Vision
  - Sensation, perception and action
  - Learning and development
  - Memory
  - Social cognition
- Linguistics
  - Language learning and representation
  - Symbolic and connectionist accounts of language acquisition
- Neurology
  - Brain imaging and anatomy of the brain
  - Computational modeling of brain functions
  - Brain neurobiology

# Cognitive Science MA Program, Boğaziçi University

## Readings

Here are some readings that cover different aspects of cognitive sciences at different levels. Some of these are popular science books (e.g. Damasio, Dennett), which should give a basic idea about the topics in an accessible fashion. Some are collections of detailed expositions in different topics (Stillings, Posner), which are much more in-depth. Others are classics in the field (Vygotsky), or representative works of a special school of thought (Elman).

1. Cognitive science : an introduction / Neil A. Stillings et al., Cambridge, Mass. : MIT Press, 1995.
2. The mind's new science : a history of the cognitive revolution / Howard Gardner, New York : Basic Books, 1987.
3. Philosophy of mind / Jaegwon Kim, Boulder, Col. : Westview Press, 1996.
4. Rethinking innateness : a connectionist perspective on development / Jeffrey L. Elman et al., Cambridge, Mass. : MIT Press, 1998.
5. Descartes' error : emotion, reason, and the human brain / Antonio R. Damasio, New York : Bard/Avon Books, 1995.
6. Mind : a brief introduction / John R. Searle, Oxford ; New York : Oxford University Press, 2004.
7. Brainchildren : essays on designing minds / Daniel C. Dennett, Cambridge, Mass. : MIT Press, 1998.
8. Hinkle, D., Wiersma, W., & Jurs, S. *Applied Statistics for the Behavioral Sciences* (5th edition), Boston: Houghton Mufflin.
9. Posner, M. I. (1989). *Foundations of Cognitive Science*. Cambridge: MIT Press.
10. *The New Psychology of Language: Cognitive and Functional Approaches to Language Structure*. Ed. M. Tomasello, Lawrence Erlbaum. 1998.
11. An introduction to language / Victoria Fromkin, Robert Rodman, Nina Hyams, Boston : Thomson/Heinle, 2003
12. Tomasello, M. (1999). *The cultural origins of human cognition*. Cambridge, MA: Harvard University Press.
13. Vygotsky, L. (1978). *Mind in Society*. Harvard.
14. Carlson. *Physiology of Behavior* Allyn & Bacon
15. *Principles of Cognitive Neuroscience* Editors: Purves, Brannon, Cabeza, Huettel, LaBar, Platt, Woldorff Published by Sinauer Associates
16. Vision science : photons to phenomenology / Stephen E. Palmer, Cambridge, Mass. : MIT Press, 1999.
17. Chomsky, N. 2000. The Architecture of Language.
18. Chomsky, N. 2007. Language and Cognition.
19. Swaab, D. F. (2015). We are our brains : from the womb to Alzheimer's. London: Penguin Books

# Cognitive Science MA Program, Boğaziçi University

## Mock Exam Questions

-What is cognitive science? Which fields is cognitive science comprised of?

-What is AI, what does it try to do?

-Describe 3 of the areas below:

- Natural language processing
- Machine learning
- Pattern recognition
- Expert systems
- Embodied systems and robotics

-What is Marr's paradigm? How does it explain information-processing tasks?

-Write 2 functions of the

- frontal
- parietal
- occipital
- temporal lobes

-Explain Sperry's brain experiments and their implications.

-Write the names and general idea of two different brain imaging techniques.

- Explain broadly the functional differences of right and left brain hemispheres.

-What is cocktail party effect? What does it imply about human attention?

-What are mirror neurons? Why are they important?

-Explain the Sapir Whorf hypothesis.

-What is a universal grammar?

-Explain the branches of linguistics below:

- syntax
- semantics
- pragmatics
- phonology
- morphology

-Which language skills are Broca's and Wernicke's areas involved with?