"Current Enigmas in Memory Research"

Description:

This lecture course will discuss important enigmas in research on learning and memory. The enigmas will touch various subfields including molecular and cellular mechanisms, circuit, systems, development, neuroanatomy, theory and models. Several systems in which learning and memory is studied will be included, ranging from invertebrates to mammals. Recent findings in the field will also be related to diseases of learning and memory.

Format:

The format of this course is specifically designed on critical readings of recent literature. In each class, the students will receive by the instructor an introduction to the topic, its history and development and debated issues. In addition, an extensive discussion of specific questions will be conducted. Hence, the students will be prepared in advance to critically read the paper and think about the strengths and weaknesses of the topic, the paper, the conclusions and the future directions.

Background Preparation (Prerequisites)

A general undergraduate level introduction to neuroscience, genetics, molecular biology, and behavior is required.

Texts and Journals References

1. Squire, L. Memory and Brain. Oxford University Press, 1987. (selected chapters will be assigned as background reading for some lectures).

2. Squire, L. and Kandel, E. Memory: From Mind to Molecules. Scientific American Library, 2000 (selected chapters will be assigned as background reading for some lectures).

3. Dudai Y. Memory from A to Z. Keywords, Concepts and Beyond. Oxford University Press, Oxford, 2002, (Selected chapters will be assigned as background reading for the different lectures).

4. Schacter, D. L. The Seven Sins of Memory: How the Mind Forgets and Remembers. Houghton Mifflin Co, 2001.

5. Luria, A. R. The Mind of a Mnemonist. Harvard University Press, 1968.

6. Bear, M., Connors, B. W., and Paradiso, M. A. Neuroscience: Exploring the Brain. Lippincott Williams & Wilkins, 3rd Edition.

7. Mechanisms of Memory, 2nd Edition, Print Book, Author(S) : J Sweatt Published: 23 Nov 2009 Imprint: Academic Press

1-3 research papers will be discussed and assigned as reading for each lecture.

Course Learning Outcomes

By the end of the course students will:

1. Have knowledge of the history of research in the learning and memory field that has led to the current state of the art.

- 2. Gained knowledge of different approaches to research in learning and memory
- 3. Understand general concepts of learning and memory
- 4. Be able to critically analyze papers in the literature of learning and memory
- 5. Conduct critical analysis of contemporary basic research in learning and memory
- 6. Discuss essential concepts of learning and memory

Course Requirements & Assignments

Attendance:

Attendance is mandatory. Three or more unexcused absences will result in a grade of "F" for the course.

Assignments:

Readings from the books listed for background information and from research papers in the current literature will be assigned for each class. Successful completion of a final exam is required.