

PSYB17-128:6 Special course in Applied Psychology: The Neuroscience of Sleep and Dreaming

Aim of the course

Aim of the course: The aim of the course is to provide a deep theoretical knowledge about the mechanisms, functions, psychological aspects and clinical relevance of sleep and dreaming. The students will learn about the biological and environmental processes that regulate sleep and wakefulness, the neural underpinnings of different vigilance states, as well as about the cognitive aspects of sleep and dreaming, covering such topics as memory consolidation, emotional regulation and information processing-during sleep. Special attention will be given to the clinical domain by examining the most prevalent sleep disorders and the role of impaired sleep in specific psychiatric conditions (e.g. PTSD, depression, psychotic states).

Learning outcome, competences

knowledge: Student will acquire a deep knowledge about the neuroscience of sleep and dreaming.

attitude: Open minded, critical thinking. Openness towards empirical, evidence-based studies.

skills: Ability to understand the psychophysiological aspects of sleep and related mental states. Understanding the main techniques and methods of neuroscientific investigations. Ability to plan and to write novel research projects within the field of sleep research.

Content of the course

Topics of the course:

Circadian rhythms, NREM sleep, REM sleep, arousals and vigilance, sleep and information processing, dreaming and dream recall, lucid dreaming, sleep disorders: diagnostics and treatment, sleep and psychiatric disorders, sleep and aging.

Learning activities, learning methods: Oral presentation, group discussions, interactive debates.

Evaluation of outcomes

Learning requirements, mode of evaluation, criteria of evaluation

- requirements: active participation in class
- participation in sleep EEG laboratory assessments and EEG analyses
- knowledge of theoretical and practical knowledge discussed in class
- presentation of projects (in groups of 2-3)

mode of evaluation: *1-5 grades*

Reading list

Compulsory reading list:

- Specified in class (Recent articles related to our topics)

Recommended reading list:

Stickgold, R., & Walker, M. P. (Eds.). (2010). *The neuroscience of sleep*. Academic Press.

Halasz, P., & Bodizs, R. (2012). *Dynamic structure of NREM sleep*. Springer Science & Business Media.

Halász, P., Terzano, M., Parrino, L., & Bódizs, R. (2004). The nature of arousal in sleep. *Journal of sleep research*, *13*(1), 1-23.

Hobson, J. A., & Pace-Schott, E. F. (2002). The cognitive neuroscience of sleep: neuronal systems, consciousness and learning. *Nature Reviews Neuroscience*, *3*(9), 679.

Walker, M. P., & Stickgold, R. (2004). Sleep-dependent learning and memory

consolidation. *Neuron*, 44(1), 121-133.

Walker, M. P., & van Der Helm, E. (2009). Overnight therapy? The role of sleep in emotional brain processing. *Psychological bulletin*, 135(5), 731