BIOENG-803

Summer School on Neurophysiology for Neural and Biomedical Engineering (2017)

Micera Silvestro

Cursus	Sem.	Type
Neuroscience		Obl.

Language of teaching	English
Credits	2
Session	
Exam	Oral presentation
Workload	60h
Hours	**52**
Courses	32
Exercises	10
TP	10
Number of positions	**28**

Remark

From 20/8 to 26/8/2017 - Zermatt (Switzerland)

Summary

The aim of the summer school is to bring fundamental knowledge of the main experimental tools and concepts in neurophysiology to the community of students working in neural engineering, neuroprosthetics or biomedical engineering fields

Content

These new and promising research fields are a melting pot of skilled researchers from different backgrounds ranging from biology to physics.
This unique mixture of skills and personalities is required as these fields are at the interface between neuroscience and engineering. However, the daily rush to success, typical of modern PhDs, especially in the field of Bio#Neural Engineering,
does not leave time to dig into the main neuro#scientific concepts and basic experimental tools.
Questions like:
• how electromyographic signals are generated at the level of the nerve muscle
junction?
• what is the source of Lead Field Potentials in the cortex?
• how this knowledge can be used in the design of better prostheses or robots? would need a proper and diligent investigation.
Therefore we believe that a comprehensive course on what these concepts are and how they relate to engineering is of fundamental importance for a better informed use of state#of the art scientific concepts and tools.
A summer school of basic science will also provide the time and the opportunity to develop new ideas that the deep knowledge of basic experimental neuroscience can provide to the attendees of the course, and therefore to the next generation of Neural and Biomedical Engineers.
Structure of the summer school
The summer school will be organized to have plenary speakers, providing the basic talks, and symposia speakers, presenting how basic neuroscience helps in their work. Plenary and symposia speakers will be invited to promote group discussions with students.

Speakers
Panel 1. Understanding neural circuits for perception and action
Prof. Sliman Bensmaia (Chicago University, US)
Prof.Rodrigo Quian-Quiroga (Leicester University, UK)
Prof Wulfram Gerstner (EPFL, CH)
Panel 2. Reading the brain
Prof. Arto Nurmikko (Brown university, US)
Prof. Daniel Huber (Geneva University, CH)

Panel 3. Interfacing the brain in clinical applications
Prof. Wael Asaad (Borwn University, US)
Prof. Alim Benabid (Grenoble University, FR)
Panel 4. Next generation enural interfaces
Prof. Stephanie Lacour (EPFL, CH)

Other scientific and networking activities
Night poster session
Students' project development and presentation
Networking dinners

Keywords

Neuroscience, Neuroprosthetics, robotics, implants

Resources

Notes/Handbook

3rd Edition

Websites

- http://nnbe.epfl.ch