EEG in neurology and neuroscience

Course organizer:
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Contributing faculty:
• Mr. Andrea Biasiucci       andrea.biasiucci@epfl.ch
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Course Dates and locations in Lausanne (including links to access information):
• 1, 2, 3, and 5 September 2014: Auditorium of the Beaumont Hospital (CHUV); #1 on map below
• 4 September 2014: Salle Andros (PMU; Rue du Bugnon 44); #2 on map below
• ELECTRONIC EXAM: Thursday, September 11th 9am to 1pm

Course objectives:
• Offer students a review of the basics of electromagnetic brain mapping with an emphasis on recent developments in the theory and methods
• Familiarize students with the practicalities of EEG acquisition and analyses in clinical and basic research via hands-on experience
• Familiarize students with the literature as well as strengths/limits of EEG as a method for clinical and basic research
• Provide the ability for students to conceive a research project involving EEG
• Provide an active exchange between Ph.D. and M.D. students

Course description:
• This intensive course will include a combination of lectures, journal club discussions, and practical experience.
• Journal clubs on each day will cover 1 article. Articles for the journal clubs will be disseminated to enrolled students mid-August 2014. The process for the presentation/discussion of journal club articles is described below.
• Practical work on Monday and Tuesday will entail students working in small groups and rotating over the two days across 4 different experimental settings.
• Practical work on Thursday and Friday will entail students analyzing and interpreting exemplar datasets.

Students’ grades will be based on 2 aspects:
• Journal Club presentation (25% of total grade)
• Electronic written examination (75% of total grade)
The journal club presentation

- Each student will be assigned by mid-August to 1 of the 5 articles and should together with the other students assigned to the same article prepare a PowerPoint presentation (MAXIMUM 10-15 minutes in duration) entailing the following sections:
  a) Summary of the article
  b) Positive and negative criticisms
  c) Open issues addressable with EEG
- The students assigned to a given article should also be fully prepared to animate a discussion with the rest of the participants in the course. This can take any of several forms including, discussion of other pertinent literature, elaboration of ideas for specific experiments to address unresolved issues, consideration of clinical applications, etc. In short, the discussion should demonstrate students’ abilities to think critically and to pose targeted questions to one’s colleagues.
- On the day that a given article is to be discussed, the course organizers will randomly select from the students assigned to that article the person to present the summary, the criticisms, and the open issues. The other students assigned to that article will animate the discussion. In this way, all students assigned to a given article should be prepared for all aspects of the presentation/discussion.

Electronic written examination

- At 9:00am on the morning of Friday, September 12th examination questions will be disseminated to all students by email. If a student does not receive these questions, he/she has the responsibility to contact one of the course organizers to ensure transmission of the examination.
- Exams must be written in English.
- The completed examination must be sent to ALL of the course organizers by 1:00pm on Thursday, September 11th. NO EXCEPTIONS WILL BE MADE. Our email addresses appear above.
- Each course organizer will provide 2 questions. The replies to both of the questions of any course organizer should not exceed 1 single-space typed page (minimum 11-point font).
- Each course organizer will provide a grade (1 to 6) for the cumulative replies to his/her questions.
- To pass the course, students cannot receive a grade below 4.0 from more than 1 course organizer on the written exam, and the average of the grades across the 5 topics (each proposed by one course organizer) may not be below 4.
- MD and PhD students will all complete the same examinations. The course organizers expect a more elaborated level from the PhD students. That is, PhD students should demonstrate a higher level of mastery of experimental design, statistical analysis, and critical thinking about data interpretation. These elements should be reflected in the written examinations.

Registration

By mail to lnscourses@gmail.com until August 10, 2014, (with the course name as subject and your supervisor in copy). The number of places is limited and will be given on first come- first served basis.
## Course Schedule:

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<tr>
<th>Time</th>
<th>Monday, September 1&lt;sup&gt;st&lt;/sup&gt;</th>
<th>Tuesday, September 2&lt;sup&gt;nd&lt;/sup&gt;</th>
<th>Wednesday, September 3&lt;sup&gt;rd&lt;/sup&gt;</th>
<th>Thursday, September 4&lt;sup&gt;th&lt;/sup&gt;</th>
<th>Friday, September 5&lt;sup&gt;th&lt;/sup&gt;</th>
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<tr>
<td>9am-11am</td>
<td>ROSSETTI “Clinical EEG”</td>
<td>BENNINGER/CHAVARRIAGA “Brain stimulation and movement analysis”</td>
<td>KNYAZEVA “History of EEG” and “EEG rhythms across the lifespan”</td>
<td>MURRAY &amp; KNEBEL “Principles of Electrical Neuroimaging”</td>
<td>CHAVARRIAGA, BIASSIUCCI &amp; DE LUCIA “EEG Classification &amp; Brain-computer interfaces”</td>
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<td>12pm-1pm</td>
<td>Lunch</td>
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<td>1:30 pm-4:30pm</td>
<td>Practical work (EEG acquisition)</td>
<td>Practical work (EEG acquisition)</td>
<td>Practical work (TMS acquisition)</td>
<td>Practical work (data analysis; Salle Micropolis, Rue du Bugnon 23, #3 on map below)</td>
<td>Practical work (data analysis; Salle Micropolis, Rue du Bugnon 23)</td>
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