CIBA 130 Basics of Brain Imaging
Take away -exam / Jarno Mikkonen
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Put the following as the topic of the email: CIBA130-exam Firstname Lastname

Last day to return the exam is 31.01.2016

Answer to these ten questions based on the knowledge and information you searched from different sources, Koppa is the best place to start. Remember to cite your sources. The difficulty level of the questions varies, but they give the same amount of points. Answer briefly, font size 12, start answer always on a new page. One page answers should suffice, two pages is the absolute maximum. I try to evaluate the insight and understanding of the topic, so rather than just typing try to look the topic from different perspectives. This is also why there might be questions without an actual clear answer in the plain meaning of the word, but something that you have to think a bit and maybe form your own opinion.

Grading will be done somewhat according to SOLO-taxonomy
0-1 p.   Answer is unlogical, little or no facts, question and answer do not meet
2 p.   Answer has one relevant point, question and answer are aligned, random facts
3 p.   Answer has several non-connecting relevant facts, list-like
4 p.   Answer indicates inductive reasoning, shows the capability to connect
            different pieces of information, generalization only to concrete experiences
5 p.   Coplex induction adn deduction, talented outlining of different level
            connections in the information, descriptions of hypothesis and generalizations.
Examples on grading:
http://www.learningandteaching.info/learning/solo.htm
http://www.feto.fi/ff_yo_arv_solo.htm

Questions:
1. NIRS (near infrared spectroscopy) is one of the methods only briefly touched on the course. Find out what kind of a method it is and compare it to fMRI and M/EEG.
2. Evoked potentials and changes in their properties are often studied in relation to cognitive functions. What do evoked potentials tell about brain function?
3. Explain the operation principles of different MEG sensors. What can we see with them (and what not)?
4. Where does the fMRI BOLD signal come from and how does it relate to more direct measures of brain activity?
5. Is brain a computer? Consider the differencies between computer and brain coding and postulate what it would take to make computer brain.
6. What error sources are commonly linked to M/EEG recordings? How can you avoid them and how can you get rid of them, if avoiding is not an option or failed?
7. Compare EEG and EcoG methods. What does the latter enable? Does it solve all problems related to EEG recordings?
8. Is PET like optogentics for humans? Compare the methods from ethical and functional point of view.
9. TMS and tDCS in clinical applications. What is the current status of neurofeedback studies? How reliable and significant do you consider the results?
10. Is neuroimaging just modern frenology?