psy220 - Human Computer Interaction

Module label
Human Computer Interaction

Module code
psy220

Credit points
6.0 KP

Workload
180 h

Used in course of study
- Master's Programme Neurocognitive Psychology > Master module

Contact person
Module responsibility
- Jochem Rieger

Entry requirements

Skills to be acquired in this module
Goals of module:
The goal of the module is to provide students with basic skills required to plan, implement and evaluate devices for human computer interaction. As a specific goal the module works toward the implementation of a brain computer interface (BCI). BCIs are ideal showcases as they fully span the interdisciplinary field of HCI design, implementation and evaluation.

Competencies:
++ Neuropsychological / neurophysiological knowledge
++ interdisciplinary knowledge & thinking
+ experimental methods
++ statistics & scientific programming
+ critical & analytical thinking
+ scientific communication skills
+ knowledge transfer
+ group work
+ project & time management

Module contents
In this module we will address human computer interaction (HCI) in its interdisciplinary requirements focusing on the perspective from neurocognitive psychology. The students learn core concepts in Human Computer Interaction plus data recording and analysis techniques related to Brain Machine Interfacing.

Part 1: Foundations of HCI and BCI (lecture)
- Human information processing and models of human cognition (Perception, attention, memory, emotion and individual differences)
- Computer interfaces for interaction
- Data analysis techniques for brain machine interfacing (time series analysis, feature selection, classification)
- Evaluation techniques

Part 2: HCI and BCI in practice (practical course)
The second part of the module builds upon the theoretical concepts elaborated in the first. We will work through recent applications published in the literature and, where applicable, implement parts of a BCI-system and conduct experiments.

Reader’s advisory
- Additional literature and material will be provided on the course website.

Links
Language of instruction
English

Duration (semesters)
2 Semester

Module frequency
The module will be offered every summer term.

Module capacity
15

Reference text
We strongly recommend to take either psy170, psy270, psy275, psy280, or psy220 to gain methodological competencies (EEG, fMRI, TBS, HCI) that are needed for most practical projects and Master's theses!

Modullevel
MM (Mastermodul / Master module)

Modulart
Wahlpflicht / Elective

Lern-/Lehrform / Type of program
Part 1: lecture; Part 2: practical course

Vorkenntnisse / Previous knowledge

Examination
Time of examination
Type of examination
Final exam of module: last lecture in summer term. The module will be evaluated with an oral exam (20 min). Bonus for a presentation and participation in discussions on other presentations in the seminar.

<table>
<thead>
<tr>
<th>Course type</th>
<th>Comment</th>
<th>SWS</th>
<th>Frequency</th>
<th>Workload attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td></td>
<td>2.00</td>
<td>SuSe</td>
<td>28 h</td>
</tr>
<tr>
<td>Theorie-Praxis-Seminare</td>
<td></td>
<td>2.00</td>
<td>SuSe</td>
<td>28 h</td>
</tr>
</tbody>
</table>

Total time of attendance for the module: 56 h.