Neuromodulation and Imaging (E010380)

Valid in the academic year 2015-2016

Course Specifications

Course size

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
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<tbody>
<tr>
<td>3.0</td>
<td>90 h</td>
<td>25.0 h</td>
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</tbody>
</table>

Course offerings and teaching methods in academic year 2015-2016

A (semester 2)

- lecture: 20.0 h
- seminar: practical PC room classes: 5.0 h

Lecturers in academic year 2015-2016

- Vandenberghe, Stefaan (TW06)
- Keereman, Vincent

Offered in the following programmes in 2015-2016

<table>
<thead>
<tr>
<th>Credits</th>
<th>Offering</th>
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<tbody>
<tr>
<td>Bridging Programme Master of Science in Biomedical Engineering</td>
<td>3 A</td>
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<tr>
<td>Bridging Programme Master of Science in Biomedical Engineering</td>
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<td>Master of Science in Biomedical Engineering</td>
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<tr>
<td>International Master of Science in Biomedical Engineering</td>
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<tr>
<td>Master of Science in Biomedical Engineering</td>
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</tbody>
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Teaching languages

- English

Keywords

- Neurobiology, EEG, MEG, (f)MRI, Neuromodulation

Position of the course

This course aims to give the students insight into the functioning of healthy brains and how these are affected in most common neurological disorder. Different techniques to measure the signals of the brain and to modulate the function of specific brain areas will be described.

Contents

- Introduction to working mechanism of brain
- Overview of neurological disorders
- Functional and anatomical imaging with MRI
- Electroencephalography (EEG) and Magnetoencephalography (MEG)
- Techniques for neuromodulation (DBS, TMS, VNS, tDCS, cortical stimulation)

Initial competences

1. You have insight in the working principles of the brain and a basic knowledge of most common neurological disorders.
2. You have an insight in the background, methods and interpretation of the different techniques to measure brain activity and signals.
3. You understand the different neuromodulation techniques and how these are used to study the function of specific brain structures and to influence regions in neurological disorders.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment.

Conditions for exam contract

This course unit cannot be taken via an exam contract

(Approved)
Teaching methods
Lecture, seminar: practical PC room classes

Learning materials and price

References

Course content-related study coaching

Evaluation methods
end-of-term evaluation

Examination methods in case of periodic evaluation during the first examination period
Oral examination

Examination methods in case of periodic evaluation during the second examination period
Oral examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation
not applicable

Extra information on the examination methods
Oral examination (written preparation).

Calculation of the examination mark