Module title
Biosignal Processing

<table>
<thead>
<tr>
<th>Module code</th>
<th>Level</th>
<th>Hours per week</th>
<th>ECTS credits</th>
<th>Duration</th>
</tr>
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<tbody>
<tr>
<td>BSV</td>
<td>Master (M.Sc.)</td>
<td>4</td>
<td>5</td>
<td>1 semester</td>
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<thead>
<tr>
<th>Module instructor</th>
<th>Lecture type</th>
<th>Prerequisite(s)</th>
<th>Grading</th>
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<tr>
<td>Prof. Dr. Doering</td>
<td>Interactive seminar with integrated exercises</td>
<td>Solid programming skills</td>
<td>Final exam</td>
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Objectives
- Students are aware of the specific challenges in biosignal processing
- Students know parameters which are relevant for the evaluation of the quality of biosignals and the choice of an appropriate signal model
- Students can apply methods to adapt and analyse linear models for stochastic biosignals and implement such methods in MATLAB®

Content
- Acquisition, quantisation and discretisation of biosignals
- Statistical signal parameters
- Filter design methods, optimal filters, adaptive filters
- Parametric and non-parametric spectral analysis
- Time – Frequency – Analysis
- Methods of Blind Source Separation (Principal Component Analysis, Independent Component Analysis)
- Classification of signals / signal sections

Textbook/teaching material
- Blinowska, Zygierewicz. Practical Biomedical Signal Analysis using MATLAB, CRC Press 2012
- Webster (ed.) Medical Instrumentation. Application and Design. Wiley 2010

Note: this is not the official course descriptor according to the “Studien- und Prüfungsordnung” (SPO)