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| <b>Module title</b>  |                          | <b>Abbreviation</b>                         |
| <b>Biophysics and Molecular Biotechnology</b>  |                          | 07-MS2BT-152-m01                            |
| <b>Module coordinator</b>  |                          | <b>Module offered by</b>                    |
| holder of the Chair of Biotechnology and Biophysics  |                          | Faculty of Biology                          |
| <b>ECTS</b>  | <b>Method of grading</b> | <b>Only after succ. compl. of module(s)</b> |
| 10   | numerical grade          | --  |
| <b>Duration</b>  | <b>Module level</b>      | <b>Other prerequisites</b>                  |
| 1 semester   | graduate                 | --  |
| <b>Contents</b>  |                          |   |
| <p>This lecture provides a broad overview of biophysical techniques and their applications. The first part of the lecture discusses fundamental aspects of thermodynamics, kinetics and molecular interactions. The course then moves on to discuss biophysical methods that facilitate the investigation of individual cells down to the level of single molecules. Focus is on electromanipulation and dielectric spectroscopy of cells, biomembranes, electrophysiology, ion channels, protein folding, single-molecule fluorescence methods and high-resolution as well as dynamic microscopy.</p>   |                          |   |
| <b>Intended learning outcomes</b>  |                          |   |
| <p>Students will have acquired a knowledge of fundamental biophysical methods and their applications that will enable them to independently review relevant literature. In addition, they will have become acquainted with - or, where necessary, will be able to independently acquaint themselves with - biophysical mechanisms.</p>   |                          |   |
| <b>Courses</b> (type, number of weekly contact hours, language — if other than German)   |                          |   |
| V (2) + S (1)<br>Module taught in: English   |                          |   |
| <b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)   |                          |   |
| <p>Students will be informed about the method, length and scope of the assessment prior to the course. Usually, one of the following options will be chosen: a) written examination (30 to 60 minutes, including multiple choice questions) or b) oral examination of one candidate each (30 to 60 minutes) or c) oral examination in groups of up to 3 candidates (30 to 60 minutes)<br/>Language of assessment: German and/or English</p>  |                          |   |
| <b>Allocation of places</b>  |                          |   |
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| <b>Additional information</b>  |                          |   |
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| <b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)   |                          |   |
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| <b>Module appears in</b>   |                          |   |
| <p>Master's degree (1 major) Biochemistry (2015)<br/> Master's degree (1 major) Biology (2015)<br/> Master's degree (1 major) FOKUS Life Sciences (2015)<br/> Master's degree (1 major) Biosciences (2016)<br/> Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)<br/> Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)<br/> Master's degree (1 major) Biosciences (2017)<br/> Master's degree (1 major) Biochemistry (2017)<br/> Master's degree (1 major) Biosciences (2018)<br/> Master's degree (1 major) Biochemistry (2019)<br/> Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)<br/> Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)</p> |                          |   |

