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| Module title | | Abbreviation |
| Principles of quantum mechanics and spectroscopy for engineering students | | o8-PC-QMS-FU-152-mo1 |
| Module coordinator | | Module offered by |
| lecturer of lecture "Grundlagen der Quantenmechanik and Spektroskopie" (Principles of Quantum Mechanics and Spectroscopy) | | Institute of Physical and Theoretical Chemistry |
| ECTS | Method of grading | Only after succ. compl. of module(s) |
| 8 | numerical grade | -- |
| Duration | Module level | Other prerequisites |
| 1 semester | undergraduate | -- |
| Contents | | |
| German contents available but not translated yet. | | |
| <p>Das Modul führt in die elementaren Grundlagen der Quantenmechanik ein. Anhand der Modelle Teilchen im Kasten, Harmonischer Oszillator und Starrer Rotator werden Moleküle analysiert. Spektroskopische Schwerpunkte sind die Schwingungsspektroskopie, Drehimpulsquantelung, Mikrowellenspektroskopie und UV/VIS-Spektroskopie. Als mathematische Grundlagen für die aufgeführten Themen werden im Modul zudem im Schwerpunkt lineare Operatoren, Eigenwertprobleme, Matrixdarstellung, Differentialgleichungen, Fouriertransformation und orthogonale Sätze von Funktionen behandelt.</p> | | |
| Intended learning outcomes | | |
| German intended learning outcomes available but not translated yet. | | |
| <p>Die Studierenden sind in der Lage, grundlegende Modelle der Quantenmechanik zu erklären und bei Molekülen anzuwenden. Er/Sie kann unterschiedliche spektroskopische Methoden darstellen. Die Studierenden können die mathematischen Grundlagen der elementaren der Quantenmechanik anwenden.</p> | | |
| Courses (type, number of weekly contact hours, language – if other than German) | | |
| V (4) + Ü (2) | | |
| Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) | | |
| <p>a) written examination (approx. 90 to 180 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (approx. 15 minutes per candidate) or d) log (approx. 20 pages) or e) presentation (approx. 30 minutes) Language of assessment: German and/or English creditable for bonus</p> | | |
| Allocation of places | | |
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| Additional information | | |
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| Referred to in LPO I (examination regulations for teaching-degree programmes) | | |
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| Module appears in | | |
| Bachelor' degree (1 major) Mathematics (2015) Bachelor' degree (1 major) Computational Mathematics (2015) Bachelor' degree (1 major) Functional Materials (2015) | | |