

<b>International Course (iMOS)</b>						
<b>Module</b> 14	<b>RC</b>	<b>Credits</b> 14 CP	<b>Workload</b> 420 h	<b>Term</b> 3. Semester	<b>Frequency</b> WiSe	<b>Duration</b> 8 weeks full-time or equivalent
<b>Courses</b> Research oriented lab project in one of the international research groups				<b>Contact hours</b> Full-time 300 h	<b>Self-Study</b> 120 h	<b>Group size</b> individual
<b>Prerequisites</b> Proof of at least 46 credit points and full or partial completion (with approval) of all required courses attributed to the first and second semester as outlined in the Examination Regulations (§8, clause 6)						
<b>Learning outcomes</b> After successful completion of the module/course, students will be able to: <ul style="list-style-type: none"> <li>- Obtain advanced knowledge of how to apply computational and/or experimental methods employed in state-of-the-art research to understand the properties of (bio)molecular systems</li> <li>- Learn to critically assess the scope and limitations of various approaches and approximations</li> <li>- Visualize and present results</li> <li>- Write reports with theories, experiments, and discussion of results</li> <li>- Utilize digital techniques to analyze and evaluate the data</li> <li>- Get acquaintance with alternative workflow organization</li> <li>- Develop International teamwork and collaboration</li> </ul>						
<b>Content</b> The practical is carried out in a research group located at one of our international partner universities/scientific institutions. Students will learn methods complementary to those available at Ruhr University Bochum. Students are expected to extend their experimental/theoretical skills to techniques not available in Bochum or to apply skills gained in Bochum to research topics in the hosting group. A wide variety of topics are possible. Examples of completed projects: <ul style="list-style-type: none"> <li>• AIMD simulations and theoretical assignment of coupled solute-solvent modes (Université d'Evry val d'Essonne)</li> <li>• Assignment of Tunneling motions in small water cluster (UC Berkeley)</li> <li>• Messenger spectroscopy of ionic liquids in the IR; gas phase IR spectroscopy (Yale University)</li> <li>• Simulation of Hv1 to investigate the opening mechanism of the proton channel (UC Irvine)</li> <li>• Single-point analysis on selected frames of a CPMD trajectory file; developing Ab-initio based potentials for ions using dipoles and force fitting procedure (ENS Paris)</li> </ul> Students will give an oral presentation of results on their return to RUB.						
<b>Teaching methods</b> Research oriented lab project in one of the international research groups						
<b>Mode of assessment</b> Active participation in practical, feedback during and on the experiment, feedback on written lab						

report by teaching assistants
<b>Requirement for the award of credit points</b> Successful project completion and satisfactory written-up lab report
<b>Module applicability</b> M.Sc. iMOS
<b>Weight of the mark for the final score</b> According to CPs
<b>Module coordinator and lecturer(s)</b> M. Havenith-Newen Faculty of the partner universities of the international Master Molecular Sciences – Spectroscopy and Simulation