Module	***Molecular Motors***
Code	74003
Instruction language	English
ECTS credits	3
Credit hours	3
Duration	1 semester
Cycle	Summer semester
Coordinator	Prof. Jens Michaelis
Lecturer	Prof. Christof Gebhardt
Allocation to study programmes	Physics M.Sc., elective module, 1st or 2nd semester Biophysics M.Sc., elective module, 2nd semester Wirtschaftsphysik M.Sc., elective module, 1st – 3rd semester
Formal prerequisites	None
Recommended prerequisites	Module Biophysics: Fundamentals
Learning objectives	Students who successfully passed this module • understand complex experimental setups in modern Biophysics • can apply fundamental biophysical methods to current molecular biological and cell biological issues • are able to describe biological phenomena using physical models of varying complexity
Syllabus	• Modern methods of Biophysics • Electrophysiology • Single molecule methods • Stochastic methods and descriptions • Microfluidics • Motor proteins • Molecular mechanisms of gene expression • Biophysics of cell division • Modern microscopy methodologies • Introduction to Bioinformatics and Statistics
Literature	• Phillips, Kondev, Theriot: Physical Biology of the Cell, Garland Science • Howard: Mechanism of Motor Proteins and the Cytoskeleton, Sinaur and Associates • Lakowicsz: Principles of Fluorescence Spectroscopy, Springer US
Teaching and learning methods	Molecular Motors (Lecture, 2 hours per week)
Workload	30 hours lecture (attendance time) 60 hours self-study and exam preparation Total: 90 hours

Assessment	Written or oral examination. A prerequisite for the participation in the examination is an ungraded course achievement. Form and scope of the examination and of the course achievement are determined and notified by the lecturer at the beginning of the course.
Examination	14003 Molecular Motors
Grading procedure	The module grade is the examination grade.
Basis for	Research in the field of Biophysics