

Module: Statistical Thermodynamics			
University/department/institute: Freie Universität Berlin/Department of Biology, Chemistry and Pharmacy/Institute of Chemistry and Biochemistry			
Responsible for the module: module lecturers			
Admission requirements: none			
Qualification aims: The students are aware of how macroscopic thermodynamic properties arise from microscopic molecular properties; they are capable of using statistical thermodynamics as a bridge between atomic structure/chemical bonding and quantum chemistry on the one hand and thermodynamics and solids and interfaces on the other hand. They can apply their knowledge in a range of contexts to solve tasks independently and in groups.			
Content: Mathematical principles; physical and quantum mechanical principles; microcanonical, canonical and grand canonical ensembles; partition functions and thermodynamic functions; quantum statistical thermodynamics for fermions and bosons; applications e.g. in the fields of balances and reaction; solids and interfaces; mixtures.			
Teaching and learning units	Attendance (Semester hours per week = SH)	Forms of active participation	Study time (hours)
Lecture	2	-	Attendance L 30 Preparation and follow-up L 30 Attendance T 30
Tutorial	2	Solving problem sets, contributing to discussions	Preparation and follow-up T 30 Examination preparation, examination 30
Language of instruction		German or English	
Compulsory regular attendance		Attendance recommended	
Study time, total hours		150 hours	5 CP
Duration of module		One semester	
Module offered		Every other semester	
Application		Master's program in Chemistry	