

Module: Homogeneous Transition Metal Catalysis			
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 have deepened their understanding of homogeneous transition metal catalysis and its importance for organic synthesis on both laboratory and industrial scales. They are familiar with the important methods of homogeneously catalyzed processes, their scope and limitations. They know methods and concepts for clarifying reaction mechanisms and can interpret experiments in the light of mechanistic ideas. They can estimate the influence of reaction parameters based on mechanistic ideas and derive suggestions for optimising and developing catalytic reactions. They are familiar with current issues in homogeneous transition metal catalysis, can research relevant findings, present them to a group and critically discuss them.			
Content: Reactivity and structure of transition metal complexes; elementary reaction steps (ligand exchange, oxidative addition, reductive elimination, insertions, eliminations) and their kinetics; hydrogenation; cross couplings (C-C- und C-heteroatom bond formation), hydroformylation, carbonylation reactions, olefin metathesis, olefin polymerization and olefin oligomerization			
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
Seminar	1	Lectures, working on problem sets, contributing to discussions	Attendance S 15 Preparation and follow-up S 45 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		Not regularly	
Application		Master's program in Chemistry	