

## 5. Topic area Organic Chemistry

<b>Module:</b> Total Syntheses and Synthesis Design			
<b>University/department/institute:</b> Freie Universität Berlin/Department of Biology, Chemistry and Pharmacy/Institute of Chemistry and Biochemistry			
<b>Responsible for the module:</b> module lecturers			
<b>Admission requirements:</b> none			
<b>Qualification aims:</b> The students have deepened their understanding of synthesis planning using retrosynthesis. They can analyze complex unknown target molecules in order to develop reasonable syntheses. They can identify typical structural motifs and are able to find ways to construct them while taking into account their reactivity, chemoselectivity, and regiochemical and stereochemical aspects. From the retrosynthetic analysis of complex target molecules, they derive suitable total syntheses, also for complex molecules. The students have solved retrosynthetic problems, including examples from current research, independently in the seminars and present and discuss them critically in the group.			
<b>Content:</b> The concept of retrosynthesis; synthons; rules; typical structural elements; typical retrosynthetic steps; classical and current examples of total synthesis of complex natural products and other organic molecules; regiochemical and stereochemical aspects of retrosynthesis; translating retrosyntheses in the corresponding total syntheses using related examples			
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
<b>Language of instruction</b>		German or English	
<b>Compulsory regular attendance</b>		Attendance recommended	
<b>Study time, total hours</b>		150 hours	5 CP
<b>Duration of module</b>		One semester	
<b>Module offered</b>		Not regularly	
<b>Application</b>		Master's program in Chemistry	