

[C1.1]	Advanced Cell Biology	Compulsory elective module in the core area C1	4-7 CP (total) = 120 - 210 h				3-5 SWS
			Contact hours 3-5 SWS / 45-75 h	Independent study 75-135 h			
Content							
<p><u>Lecture</u>: Autophagy, mitochondrial cell biology, non-membranous organelles / phase transitions, endocytosis and membrane traffic, optogenetics in cell biology, signal transduction, systems and synthetic biology, other current developments in cell biology, modern methods in cell biology.</p> <p><u>Seminar (CEM)</u>: Current original literature on cell biological topics in the literature seminar is presented as a seminar talk (student groups of two or three), and discussed and evaluated in the plenum.</p> <p><u>Practical course (CEM)</u>: Basic cell-biological experiments using cultivated mammalian cells. Cell culture, sterile techniques, testing for contamination (PCR, fluorescence staining of mycoplasma), transfection of cells, light microscopy, (immuno)fluorescence microscopy, staining of specific cell types, organelles or cytoskeletal elements in fixed or unfixed cells, Ca²⁺ imaging, luciferase assay and RNAi.</p> <p><i>The lecture must be combined with either the seminar (CEM) or/and the practical course (CEM).</i></p>							
Learning outcomes and skills							
After successfully completing the course, students are able to understand the basics, methods and complex relationships in cell biology and to critically evaluate current research literature. In addition, based on selected practical experiments on cultivated cells, they have learned basic methods and acquired skills so that they can apply them, for example as part of a master's thesis, in their own research project or later in their professional life.							
Admissions requirements/Conditions for participation in the module/courses							
Practical course: Passed final exam							
Recommended prior knowledge							
None							
Organizational details							
The practical course is offered as a one-week block course during the lecture-free time (maximum of 20 students per term).							
Module allocation (degree programme/faculty)			Master Biochemistry / FB14				
Module transferrable to other degree programmes							
Module offered			<ul style="list-style-type: none"> - Lecture: winter semester - Seminar: summer semester - Practical course: Offered each winter and summer semester during the lecture-free time 				
Duration			2 semesters				
Module coordinator			Prof. Gottschalk				
Course requirements for credits							
Participation record			<ul style="list-style-type: none"> - Seminar: Regular and active participation - Practical course: Regular attendance 				
Coursework			<ul style="list-style-type: none"> - Seminar: Presentation - Practical course: Fulfillment and protocols of the practical course experiments 				
Forms of teaching / learning			Lecture, seminar, practical course				
Language teaching and instruction			English				
Module assessment			Form / duration / content, if applicable				
Final module assessment			Written exam for the lecture (90 min.) or oral exam (45 min.)				
Cumulative module assessment consisting of							
Composition of the module grade for cumulative module assessment							
		Mode of teaching / study	Semester hours per week	Semester CP			
				1	2	3	4
	Advanced cell biology	L	1	2			
	CEM: Current topics in cell biology	S	2		3		
	CEM: Cell biology	P	2	2			
	TOTAL		3-5	4-7			