

Redoxbiochemistry						
Identification number	Workload	Credit points	Term of studying	Frequency of occurrence	Duration	
MN-B-SM (B 4)	360 h	12 CP	1 st or 2 nd term of studying	Summer term, 2 nd half	7 weeks	
1	Type of lessons		Contact times	Self-study times	Intended group size*	
	a) Lectures		24 h	48 h	max. 8	
	b) Practical/Lab		154 h	102 h	max. 2	
	c) Seminar		8 h	24 h	max. 2	
2	Aims of the module and acquired skills Students who successfully completed this module ... <ul style="list-style-type: none"> • have acquired detailed knowledge on redox-dependent processes in diverse organelles and organisms including oxidative protein folding and redox signaling. • can independently develop strategies for characterization of different redox enzymes and pathways, and are able to analyze enzymes/pathways on different levels, such as primary sequence, domain structure, oligomerization, three-dimensional structure, evolutionary conservation, genetic interactions with other pathways. • can independently carry out small scientific projects related to the topic of the module. • have learned how to present research results in oral and written form and to critically discuss scientific publications related to the topic of the module on a professional level. • are able to transfer skills acquired in this module to other fields of biochemistry. 					
3	Contents of the module <ul style="list-style-type: none"> • Yeast cell culture, analyses of yeast phenotypes and genetic manipulation • Purification of recombinant proteins and their biophysical, biochemical and structural analysis • Redox state experiments and redox regulation in mammalian tissue culture cells • Enzyme kinetics on redox enzymes • Genetically-encoded fluorescent sensors (H₂O₂, glutathione, ATP, pH) 					
4	Teaching/Learning methods Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form					
5	Requirements for participation Enrollment in the Master´s degree course "Biological Sciences" or in the Master's degree course "Biochemistry"					
6	Type of module examinations The final examination consists of two parts: Two hours written examination about topics of the lectures and the practical/lab part (70 % of the total module mark) and oral presentation (30 % of the total module mark)					

Redoxbiochemistry (MN-B-SM [B 4]) continued

7	Requisites for the allocation of credits Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)
8	Compatibility with other Curricula Biochemical subject module in the Master's degree course "Biochemistry"
9	Significance of the module mark for the overall grade In the Master's degree course "Biological Sciences": 15 % of the overall grade (see also appendix of the examination regulations)
10	Module coordinator Prof. Dr. Jan Riemer, phone 470-7306, e-mail: jan.riemer@uni-koeln.de
11	Additional information Subject module of the Master's degree course "Biological Sciences", Focus of research: (B) Biochemistry, Biotechnology and Biophysics Participating faculty: Prof. Dr. J. Riemer Literature: <ul style="list-style-type: none">• Subject-specific literature will be provided at the beginning of the module Note: The module contains hand-on laboratory work conducted by small groups of students and is taught in research laboratories. The module does not contain computer-based practicals/research as a main component. General time schedule: Week 1 (Mon.-Fri.): Lectures, preparations for practical work and practical work; Week 2-5 (Mon.-Fri.): Lectures, Seminars and practical/lab; Week 6 (Mon.-Fri.): Preparing chalk talk and chalk talk presentation about the content of the practical; Week 7 (Mon.-Fri.): Preparation for the written examination Introduction to the module: May 25, 2020 at 8:30 a.m. (this date is also the start of the module = week 1), Institute for Genetics / Molekulare Biowissenschaften, room 0.01 (ground floor) Written examination: July 17, 2020, second/supplementary examination August 28, 2020; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.

* 2 students from the Master's degree course "Biological Sciences" and 6 students from the Master's degree course "Biochemistry".