

M4451	Ausarbeitung eines Forschungsprojekts			
	Conceptual design of a research project			
Coordinator (responsible lecturer) Prof. Dr. Petra Bauer (petra.bauer@uni-duesseldorf.de)				
Lecturers Prof. Dr. Petra Bauer, Dr. Tzvetina Brumbarova, Dr. Rumén Ivanov				
Organization Dr. Tzvetina Brumbarova (tzvetina.brumberova@uni-duesseldorf.de)				
Work load 420 h	Credit points 14 CP	Contact time 300 h	Self-study 120 h	Duration 6 weeks
Course components Practicum: 18 PPW Lecture: 2 PPW		Frequency WS		Group size 6 students
Learning outcomes/skills <p>The students know how to develop and write a project proposal. They know how to identify and formulate their research aims, how to convincingly present the importance of their research, how to describe the methods that will be used and justify their choice, how to formulate the expected outcome, how to predict potential pitfalls and problems, and plan alternative research strategies. The students know how to develop a realistic time plan for the proposed project and present a concise scheme of the proposed work, e.g. in a flowchart. The students know how to judge the financial aspect of the project and how to calculate costs.</p> <p>In addition, the students are familiar with different funding possibilities and how to choose the funding program that is best suited for their project proposal.</p> <p>Based on their own literature research, the students develop a project idea, design and perform a set of pilot experiments. The formulated ideas and obtained proof-of-concept results form the basis of the project proposal.</p> <p>The students know how to summarize the key points of their project proposal in a written manner and in an oral presentation.</p> <p>The skills acquired by the students will be useful throughout the course of their advanced studies and future career, e.g. for PhD fellowship applications, research grants, company-based funding, etc. These skills will allow them to independently plan and control the progress of their work in the context of their predefined aims.</p>				
Forms of teaching Lecture, practicum				
Contents <p><u>Lectures:</u> Designing and writing a project proposal: defining a project idea, identifying its importance within the research area and beyond, defining the time frame for the proposed work, structure of the proposal, key points to consider. Different types of project proposals and different funding possibilities according to the target group. Financial aspects of a project proposal, calculation of costs. Presentation, interactive discussions, selection of research topics and open questions in the plant field. Regular status discussions.</p> <p><u>Practical course:</u> The topic of the project proposal and the corresponding experimental part can be chosen from a list of predefined plant research areas (such as stress responses, plant hormone effects, etc.) or they can be suggested by the students. Each student will work individually under supervi-</p>				

sion. Each student will perform an extensive literature search on the chosen topic, establish a research plan, design and perform his/her own set of experiments targeted to the defined research question. The students will provide an estimation on the financial part of the proposal. The students can choose from a wide range of physiological (growth assays, enzymatic activity assays, complementation assays, etc.), cellular (protein localization) and molecular (gene expression analysis, protein expression and regulation, etc.) approaches for testing their ideas, depending on the feasibility and availability of material during the duration of the course. Potential test systems include bacteria, yeast and plants.

Requirements for admission

Formal: Admission to master studies Biology/Biochemistry

With regards to content: -

Type of examination

1. Competence area "Knowledge" (60 % of the final grade): written project proposal following the contents of the lectures and containing the results of the practical work
2. Competence area "Presentation" (20 % of the final grade): oral presentation, discussion and defense of the project aims and project plan
3. Competence area "Documentation" (20 % of the final grade): experimental design and documentation of results

Requisites for the allocation of credit

1. Delivery of a written project proposal corresponding to the standards defined in the lectures
2. Presentation of the project proposal in the form of a talk/poster according to required standards
3. Regular and active participation in all parts of the module

Relevant for following study programs/major (only MSc programs)

M.Sc. Biology

M.Sc. Biology International

Major (only M.Sc. biology)

Compatibility with other curricula

M.Sc. Biochemistry

Significance of the mark for the overall grade

The mark given will contribute to the final grade in proper relation to its credits.

M.Sc. biology 14/72 CP

M.Sc. biology international 14/54 CP

Course language

English

Additional information

Enrolling into the module is granted by the central study office of the Department of Biology.