

Handbook of modules for the study course Biological Resources, M.Sc.

May 2026

valid for all students enrolled
from WS 2026/27 onwards

Biological Resources, M. Sc.

The most important details

Duration:	3 semesters (full-time study) 6 semesters (part-time study)
Location:	Kleve
Qualification:	Master of Science, M.Sc.
Course start:	summer term und winter term
Language:	English
Master thesis:	during 3rd semester (full time study) during 5th and 6th semester (part time study)
Calculation of workload:	1 CP equals 30 hours per semester
Examinations:	all examination types as detailed in §14, 17–20 General Examination Regulations for Bachelor Degree Programmes
Literature:	Literature mentioned in the module descriptions are first recommendations and do not replace the syllabus of the module. The module coordinators assume as a rule that the titles specified always refer to the most current version.
Attendance:	Attendance of all lab courses, seminars and exercises marked * is mandatory, attendance of all seminars and exercises is recommended.

**This programme is
accredited by**

Curriculum Biological Resources, M.Sc. (full time study)

Curriculum Biological Resources, M.Sc.

Module Code	Modules	Module Requirements	CH	Type						Exam		ECTS points*	CH			
				L	S	E	Pra	Pro	graded	attestation	ST		WT			
BR 1 5001	Simulation of Biological Systems		4	2		2				P		5	4			
BR 1 5002	Animal Ecology and Ecosystem Services		4	3				1		P	T	5	4			*
BR 1 5003	Soil Biological Resources		4	2				2		P	T	5	4			*
BR 1 5004	Closing Cycles: Use and Reduction of By-products		4	3				1		P	T	5	4			*
BR 1 5005	Research Project		4	2				2			T	5	4			
BR 2 5021	Environmental Valuation and Economic Impact Assessment		4	3		1				P		5		4		
BR 2 5023	Underutilized Plant Resources		4	2				2		P	T	5		4		*
BR 2 5024	Processing Biological Resources		4	2				2		P	T	5		4		*
BR 2 5025	Lecture Series Biological Resources		4	2	2						T	5	2	2		
BR 2 5036	Sustainability Assessment and Life Cycle Assessment		4	3	1					P		5		4		
	Elective modules		6	3	3					P		10	3	3		
BR 3 5081	Master Thesis	min. 50 ECTS								P		25				X
BR 3 5082	Colloquium	min. 85 ECTS								P		5				X
	total credit hours		46	27	6	3	8	2				90	25	21		
													30	30	30	
													60	30	30	
													90			

	total	1.Sem	2.Sem	3.Sem
CH	46	25	21	
ECTS Points	90	30	30	30

Abbreviations

CH = credit hours per week
 E = Exercise
 ECTS points = European Credit Transfer System of Credit Points
 L = Lecture
 P = examination (graded)
 Pra = lab course
 Pro = project
 T = attestation (passed)
 S = Seminar

* ECTS points are only credited after all module parts have been successfully completed.

Module Code	Elective Modules	Module Requirements	CH	Type						Exam		ECTS points*	CH			
				L	S	E	Pra	Pro	graded	attestation	ST		WT			
BR 1 5043	Use of Diversity in a Changing World		3		2		1			P	T	5	3			*
BR 1 5061	Animal Resources in Bioeconomy		3	2		1				P		5	3			
BR 1 5045	Innovation Management		3	2		1				P		5	3			
BR 1 5049	Quality and Sustainability in Biological Resource Value Chains		3	1	1	1				P		5	3			
BR 2 5062	Environmental Systems Analysis		3		3					P		5		3		
BR 2 5064	Entrepreneurship and Business Planning		3	2		1				P		5		3		
BR 2 5066	Analytics of Renewable Resources		4	2				2		P	T	5		4		*
BR 1 WPF_5	Module from any master study course at Rhine-Waal University of Applied Sciences		3	3						P		5	3			**
BR 2 WPF_6	Module from any master study course at Rhine-Waal University of Applied Sciences		3	3						P		5		3		**
	2 elective modules amount to		6									10				

The faculty reserves the right to determine a minimum number of participants for offering an elective subject. Admission to mandatory modules is subject to available capacities. The possibility to obtain the required number of credit points remains unaffected.

In case of new developments in the different fields of Biological Resources the faculty reserves the right to expand the range of elective modules with further subjects over the time.

** The actual selection from any master study course at Rhine-Waal University has to be approved by the head of the examination committee.

Curriculum Biological Resources, M.Sc. (part time study)

Curriculum Biological Resources, M.Sc.

Module Code	Modules	Module Requirements	CH	Type						Exam graded	attestation	ECTS points	part time study							
				L	S	E	Pra	Pro	ST 1				WT 1	ST 2	WT 2	Sem 5	Sem 6			
BR 1 5001	Simulation of Biological Systems		4	2		2				P		5	4							
BR 1 5002	Animal Ecology and Ecosystem Services		4	3				1		P	T	5	4							*
BR 1 5003	Soil Biological Resources		4	2				2		P	T	5	4							*
BR 1 5004	Closing Cycles: Use and Reduction of By-products		4	3				1		P	T	5			4					*
BR 1 5005	Research Project		4	2					2		T	5			4					
BR 2 5021	Environmental Valuation and Economic Impact Assessment		4	3		1				P		5		4						
BR 2 5023	Underutilized Plant Resources		4	2				2		P	T	5		4						*
BR 2 5024	Processing Biological Resources		4	2				2		P	T	5				4				*
BR 2 5025	Lecture Series Biological Resources		4	2	2						T	5			2	2				
BR 2 5036	Sustainability Assessment and Life Cycle Assessment		4	3	1					P		5				4				
	Elective modules		6	3	3					P		10		3	3					
BR 3 5081	Master Thesis	min. 50 ECTS								P		25								X
BR 3 5082	Colloquium	min. 85 ECTS								P		5								X
total credit hours			46	27	6	3	8	2				90	12	11	13	10				
												ECTS points		15	15	15	15	30		
														60		90				

	total	1.Sem	2.Sem	3.Sem	4. Sem	5. Sem	6. Sem
SWS	46	12	11	13	10		
ECTS points	90	15	15	15	15		30

Abbreviations

CH = credit hours per week
 E = Exercise
 ECTS points = European Credit Transfer System of Credit Points
 L = Lecture
 P = examination (graded)
 Pra = lab course
 Pro = project
 T = attestation (passed)
 S = Seminar

* ECTS points are only credited after all module parts have been successfully completed.

The elective modules hold true as in the fulltime version.

Assessment Methods for Biological Resources, M.Sc.

Module Code	Modules	Exam		
		graded	attestation	
BR 1 5001	Simulation of Biological Systems	1. written exam, 120 minutes 2. assignment		
BR 1 5002	Animal Ecology and Ecosystem Services	written exam, 90 minutes	attestation for lab course	*
BR 1 5003	Soil Biological Resources	1. written exam, 120 minutes (80%) 2. assignment (20%)	attestation for lab course	*
BR 1 5004	Closing Cycles: Use and Reduction of By-products	written exam, 120 minutes	attestation for lab course	*
BR 1 5005	Research Project		depends on project chosen	
BR 1 5043	Use of Diversity in a Changing World	assignments	attestation for lab course	* elective
BR 1 5045	Innovation Management	1. paper (50%) 2. presentation/oral exam (50%)		elective
BR 1 5049	Quality and Sustainability in Biological Resource Value Chains	1. presentation (75%) 2. paper (25%)		elective
BR 1 5061	Animal Resources in Bioeconomy	1. written exam, 90 minutes (60%) 2. semester projects (40%)		elective
BR 1 WPF_5	Module from any master study course at Rhine-Waal University of Applied Sciences	depends on module chosen		** elective
BR 2 5021	Environmental Valuation and Economic Impact Assessment	1. written exam in presence (60%) 2. oral presentation (25%) 3. home assignment (15%)		
BR 2 5023	Underutilized Plant Resources	written exam, 120 minutes	attestation for lab course	*
BR 2 5024	Processing Biological Resources	written exam, 120 minutes	attestation for lab course	*
BR 2 5025	Lecture Series Biological Resources		1. research proposal 2. continuous assignments	
BR 2 5036	Sustainability Assessment and Life Cycle Assessment	1. written exam, 120 minutes (80%) 2. paper/presentation (20%)		
BR 2 5062	Environmental Systems Analysis	assignments, upload on Moodle		elective
BR 2 5064	Entrepreneurship and Business Planning	1. presentation 2. seminar paper		elective
BR 2 5066	Analytics of Renewable Resources	1. written exam, 60 minutes 2. presentation	attestation for lab course	* elective
BR 2 WPF_6	Module from any master study course at Rhine-Waal University of Applied Sciences	depends on module chosen		** elective
BR 3 5081	Master Thesis	written thesis of approx. 50–120 pages		
BR 3 5082	Colloquium	oral exam, max. 45 minutes		

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Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 1 (part time)		

Workload

Contact time		Self-study	
Lecture	30 h	Preparation for contact time	30 h
Excursion/Exercise	30 h	Preparation for exams	60 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. PD Dr.-Ing. Sylvia Moenickes

Lecturers

Prof. PD Dr.-Ing. Sylvia Moenickes; Prof. Dr. Carsten Pohl

Teaching contents

Modelling: basics of demography and related data generation, discrete lumped population models, matrix models, steady state distribution, reproductive value, sensitivity, elasticity, population models based on differential equations, stability of steady states

Related programming: basic elements of coding such as loops, conditions, arrays, plotting, either in Matlab or R

Statistics: Methods of inferential and explorative statistics, hypothesis testing, (m)anova, uni- and multi-variate linear regression, Cluster analysis, principal component analysis.

Related programming: Data analysis based on excel and R

Learning objectives

On successful completion of this module, students should

- know properties of different models, systems, and statistical tools for interpretation¹
- understand basic Matlab / R / excel code²
- be able to describe and implement models³
- be able to read implemented models, run these models in a meaningful way for different scenarios and interpret⁴
- be able to make clear statements on model-based projections.⁵

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Seminar; self-study; group work; excursion; exercise; feedback

Entrance requirements

None

Reading list

Field: Discovering Statistics using R, Sage

Delore: Statistics for Scientists and Engineers, Pearson

Veaux: Stats: Data and Models

For modelling it will be provided during the lecture

Examination in summer term 2027

Graded exam: 1. written exam, 120 minutes; 2. assignments

Teaching materials and media

Beamer; white/black board; handouts; flipchart; visualisation aids for presentation; demonstration materials

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence		X	
Methodological competence	X		
Social competence			X

Last amended: May 2026

Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 1 (part time)		

Workload

Contact time		Self-study	
Lectures	45 h	Preparation for contact time	30 h
Lab course/Field course	15 h	Literature review	30 h
		Preparation for exams	30 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr. William Megill

Lecturers

Prof. Dr. Lily Chambers

Teaching contents

Animal species and the niche concept, evolution, succession and natural selection; resources; intraspecific competition; dispersal, dormancy and metapopulations; interspecific competition; predation and population dynamics; community ecology; fluxes of energy and matter through ecosystems; the ecosystem as a resource for human economy: ecosystems services; mapping and quantifying ecological resources in economic terms; conservation science; ecosystems engineering

Learning objectives

On successful completion of this module, students should

- be able to safely conduct ecological fieldwork^{1,3}
- be able to explain the role of animals in maintaining structure and process in ecosystem¹
- be able to evaluate the changes in habitat structure in an ecosystem due to natural succession and understand the extent to which conservation management is the management of successional processes⁴
- be able to assess the relative importance of abiotic factors influencing animal ecosystems in contrast to biotic factors from within the systems¹
- be able to master the concept of ecosystem services and be able to describe and quantify them in a variety of ecosystems across a wide range of scales^{2,3}
- be able to make a balanced assessment of the conflicts between conservation and other competing land uses^{4,5}
- appreciate the nature of landscape ecology and the importance of spatial relationships of such features as corridors and mosaics^{1,2}
- adopt a global attitude towards natural ecosystems in biomes and the large-scale processes which govern their diversity⁵
- be able to consider the social and ecological impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Seminar; self-study; group work; excursion; exercise; feedback

Entrance requirements

None

Reading list

Begon, Townsend and Harper: Ecology: From individuals to ecosystems
Sodhi and Ehrlich: Conservation biology for all. Society for Conservation Biology

Examination in summer term 2027

graded exam: written exam, 90 minutes
certificate for lab course

Teaching materials and media

Beamer; white/black board; handouts; flipchart; visualisation aids for presentation; demonstration materials

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence		X	
Methodological competence	X		
Social competence			X

Last amended: May 2026

Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 1 (part time)		

Workload

Contact time		Self-study	
Lectures	30 h	Preparation for contact time	30 h
Lab course	30 h	Literature review	30 h
		Preparation for exams	30 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr. Florian Wichern

Lecturers

Prof. Dr. Florian Wichern; Dr. Conor Watson; N.N.

Teaching contents

Soil microbial and macrobial resources and their potential use in biotechnology and agriculture (e.g. aromatics, antibiotics, remediation); influence of environmental and human factors (e.g. stressors) on soil biological resources; qualitative and quantitative determination of soil biota by classical techniques and modern molecular biological methods; detection of microbial functions, such as enzyme activity; use and development of cultivation and propagation techniques; application of soil biotechnology; experimental design and statistical analysis

Learning objectives

On successful completion of this module, students should

- be familiar with soil microbial and macrobial resources and their possible uses¹
- know how soil biota is influenced by environmental and human abiotic and biotic factors¹
- be able to relate their knowledge about soil resources to its relevance in bioeconomy and land use²
- be able to apply special analytical lab procedures of soil ecology and microbiology in lab experiments³
- be able to analyse and document results and findings in a scientifically appropriate form⁴
- be able to analyse how their data compare with the data of others⁴
- be able to evaluate the potential of soil biological resources in biotechnology and land use⁵
- be able to critically discuss options of a sustainable use of soil biological resources *ex situ* and *in situ*⁵

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lab course; field trip; lecture; self-study

Entrance requirements

None

Reading list

Weil and Brady: The Nature and Properties of Soils
Killham: Soil Ecology
Prescott, Harley, Klein: Microbiology
Glazer: Microbial Biotechnology: Fundamentals of Applied Microbiology
Brock: Biology of Microorganisms
Various scientific publications for methods and comparison of results

Examination in summer term 2027

graded exam: 1. written exam, 120 minutes (80%), 2. assignment (20%)
certificate for lab course

Teaching materials and media

Beamer; white/black board; hand-outs; lab equipment; flipchart; visualisation aids for presentation;
demonstration materials; A/V media

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence			X

last amended: May 2026

Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 2 (part time)		

Workload

Contact time		Self-study	
Lectures	45 h	Preparation for contact time	50 h
Lab course/Field course	15 h	Literature review	20 h
		Preparation for exams	20 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr. Matthias Kleinke

Lecturers

Prof. Dr. Matthias Kleinke; Prof. Dr.-Ing. Frank Platte

Teaching contents

biological resources and their cycles; anthropogenic impacts on natural materials cycles; environmental impact; fundamentals in waste and water management; use and reduction of biological by-products; energy production from biological resources, utilization of biofuels and biomaterials

Learning objectives

On successful completion of this module, students should

- be able to explain the elements of the fundamental biological resources and understand their cycles^{1,2}
- know and understand basic concepts of environmental health and risk management^{1,2}
- be able to describe and assess anthropogenic impacts on natural cycles and resources as well as environmental status^{1,2,3}
- value scarce resources and improve community understanding of the importance of closing circles and conserving those resources^{1,2,4}
- be able to compare, understand, apply, and analyse fundamental laws and equations in circular economy^{1,2,3,4}
- be able to outline and analyse the key elements of waste and water management^{1,2,3,4}
- be able to identify the most important procedures of use and reduction of organic by-products and appreciate their importance with regard to possible economic effects^{2,3,4,5}
- be able to consider the social and ecological impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; excursion

Entrance requirements

None

Reading list

Bilitewski: Waste Management
Davis and Cornwell: Introduction to Environmental Engineering
Dahlquist: Biomass as Energy Source
Schaub and Turek: Energy Flows, Material Cycles and Global Development
Tomes, Prakshmanan and Songstad: Biofuels

Examination in summer term 2027

graded exam: written exam, 120 minutes
certificate for lab course

Teaching materials and media

Projector; white/black board; hand-outs; lab equipment; flipchart; visualisation aids for presentation; demonstration materials; A/V media

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence		X	
Social competence			X

last amended: May 2026

BR 1 5005 Research Project

Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 2 (part time)		

Workload

Contact time		Self-study	
Lecture	15 h	Preparation for contact time	50 h
Project	15 h	Literature review	50 h
		Preparation for exams	20 h
Sum	30 h	Sum	120 h

Total workload: 150 h

Module coordinator

Prof. Dr. Marcel Friedrich

Lecturers

all lecturers of the faculty Life Sciences

Teaching contents

The project is an individual or a group work on a specific scientific topic chosen from a variety of options offered by the professors. It includes extensive literature research, field or lab work and data analysis. Additionally, seminars are offered on scientific working and writing, on basics, regulations and relevant topics of biological resources, as well as including a section on research ethics.

Learning objectives

On successful completion of this module, students should

- know the relevant aspects in the field of research chosen¹
- have further advanced their ability to search and summarize scientific literature in the relevant field of research independently²
- have further advanced their ability to organise and manage a project²
- be able to apply relevant scientific methods³
- be able to present and document results and findings in a scientific report/article⁴
- be able to analyse in depth how their findings are related to those of others⁴
- be able to critically evaluate the scientific methods used⁵
- be able to critically discuss their findings in the context of biological resource use and management⁵

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Group work; self-study; excursion; seminar; feedback

Entrance requirements

None

Reading list

Various case studies and scientific publications

Examination in summer term 2027

certificate, depends on project chosen

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart; visualisation aids for presentation; demonstration materials; A/V media

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence	X		

last amended: May 2026

Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 2 (part time)		

Workload

Contact time		Self-study	
Seminar	30 h	Preparation for contact time	35 h
Lab course/Field course	15 h	Literature review	35 h
		Preparation for exams	35 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Module coordinator

Prof. Dr. Natalie Laibach

Lecturers

Prof. Dr. Natalie Laibach; Prof. Dr William Megill; Maren Weller, M.Sc.,

Teaching contents

Acquisition of skills that are crucial to extent, distribute and stabilize the biodiversity in different parts of the world; change and turnover of biological diversity through time over large and small temporal scales (ecological and evolutionary processes); influences of human-related activities on transformation in ecosystems; ecosystem services and opportunities for sustainable use of biological resources; tools and policies towards sustainable ecosystems; visits of sites which are related to biodiversity or are impacted by urban development; obtaining of environmental samples to assess the conservation values of that site; group projects

Learning objectives

On successful completion of this module, students should

- have detailed knowledge on skills for the assessment of conservation values^{1,2}
- be able to critically review literature on the topic of biodiversity in a changing world^{2,3}
- be able to apply the knowledge and analyse the conservation value of different environmental sites within a group^{3,4}
- be able to critically discuss findings and define solutions or recommendations based on the acquired knowledge^{4,5}
- be able to relate the use of biological resources to potential impacts on biodiversity^{3,5}
- be able to consider the social and ecological impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lab course; self-study; group work; field trip

Entrance requirements

None

Reading list

Recommended reading material will be presented during the course.

Examination in summer term 2027

graded exam: assignments
certificate for lab course

Teaching materials and media

Beamer; white/black board; hand-outs; lab equipment; flipchart; visualisation aids for presentation; demonstration materials

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence		X	

last amended: May 2026

Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 2 (part time)		

Workload

Contact time		Self-study	
lecture	30 h	Preparation for contact time	30 h
exercise	15 h	Literature review	40 h
		Preparation for exams	35 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Module coordinator

Prof. Dr. Marcel Friedrich

Lecturers

Prof. Dr. Marcel Friedrich

Teaching contents

Innovation management as an integral part of corporate management; description of innovation strategies in a corporate context; presentation of internal innovation process as well as the possibilities of external partnerships; the connection to the operational management of technology; organizational embedding of innovation management; discussion of specific case studies and application of modern methods of innovation management to practical examples

Learning objectives

On successful completion of this module, students should

- be able to apply relevant concepts and methods of innovation management¹
- understand the need for and nature of innovation²
- be able to classify the innovation management in the corporate governance^{3,4}
- know concepts and strategies of innovation management^{1,4}
- be able to describe and apply the innovation process in a realistic context^{1,3,4,5}
- know the organizational forms of innovation management^{1,4}
- be able to apply creative techniques to the development of innovative ideas^{1,3}
- be able identify innovation opportunities^{1,3}
- be able to consider the social impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}
- be qualified for management and leadership tasks in the above-mentioned areas³

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; projects and / or case studies

Entrance requirements

None

Reading list

Tidd and Bessant: Managing Innovations
Ahmed and Shephard: Innovation Management
Trott: Innovation Management and New Product Development

Examination in summer term 2027

graded exam: 1. paper (50%); 2. presentation/oral exam (50%)

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart; moderation materials

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence			X

last amended: May 2026

BR 1 5049 Quality and Sustainability in Biological Resource Value Chains (elective)

Study semester: Summer term (full time) **Credit Points (ECTS):** 5
Summer term 2 (part time)

Workload

Contact time		Self-study	
Lecture	15 h	Preparation for contact time	35 h
Seminar	15 h	Literature review	35 h
Exercise/ project	15 h	Preparation for exams	35 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Module coordinator

Prof. Dr. Simone Pauling

Lecturers

Prof. Dr. Simone Pauling

Teaching contents

Value chains link producers and consumers; along the chains firms create value for competitive advantage. With sustainability as a key driver for innovation, value chains across industry sectors are set created to valorise by-products. Aspects of quality, sustainability and logistics in the different industry sectors need to be thoroughly considered and set into perspective with conventional value chains of the agrifood sector. Students will learn how biological resource sector(s) work, get an overview of the actors, organization and governance of biological resource value chains. Students will learn approaches of value chain analysis and quality management in agrifood value chains. Based on selected models from institutional economics and industrial organization students will study public and private governance of (sustainable) agrifood and biological resource value chains. Students will learn about challenges of trans-industry value chains and implications for quality and sustainability management. Students will learn how to set up and model a circular value chain.

Learning objectives

On successful completion of this module, students should

- know principles of value chain analysis¹
- know quality and sustainability management systems along biological resource value chains¹
- know circular value chains across industry sectors and understand the implications for logistics, sustainability and quality^{1,2}
- be able to apply value chain analysis and reporting methods to the study of agrifood and biological resource value chains^{3,4}
- be able to design circular value chains in the bioeconomy³
- be able to document results and findings in a scientifically appropriate form^{4,5}
- be able to design sustainability management systems of agrifood and biological resource value chains⁵

- be able to consider the social and ecological impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}
- be qualified for management and leadership tasks in the above-mentioned areas³

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; case study; group work and presentation; field trip

Entrance requirements

None

Reading list

Reading material will be distributed during the course

Examination in summer term 2027

graded exam: 1. presentation (75%); 2. paper (25%)

Teaching materials and media

Beamer, white/black board; hand-outs; flipchart; visualisation aids for presentation; demonstration materials, exercise

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence		X	

last amended: May 2026

Study semester:	Summer term (full time)	Credit Points (ECTS):	5
	Summer term 2 (part time)		

Workload

Contact time		Self-study	
Lecture	30 h	Preparation for contact time	35 h
Exercise	15 h	Literature review	25 h
		Preparation for exams	45 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Coordinator

Prof. Dr. Steffi Wiedemann

Instructors

Prof. Dr. Steffi Wiedemann; Maren Weller, M.Sc.

Contents

Introduction to animal resources in bioeconomy (relevance and diversity of farm animals, aquaculture, and insects; economic and ecological interactions); biotic and abiotic influences on animals and bioeconomics; strategies for sustainable waste management of biodegradable wastes and associated nutrient fluxes; environmental impacts of animals (greenhouse gas dynamics, leaching and eutrophication and mitigation strategies; carbon sequestration potentials in grasslands and forests; biodiversity); insects as resources; aquaculture systems in bioeconomy; resource use efficiency and nutrient management

Intended learning outcomes

On successful completion of this module, students should

- understand the relevance of animal resources for circular economies^{1,2}
- have a profound knowledge on the management of biological resources derived from animals²
- be able to apply methods to compare the resource use efficiency of different agricultural systems³
- be able to critically compare publications about animal resources in bioeconomy⁴
- be able to evaluate interactions of animal and bioeconomy based on acquired knowledge⁵

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; case studies; field trip(s); exercises; group projects; e-learning modules; literature review

Entrance requirements

None

Reading list

Literature will be distributed in the course

Examination in summer term 2027

graded exam: 1. written exam, 90 minutes (60%); 2. semester projects (40%)

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart; visualisation aids for presentation; demonstration materials, online tools

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence		X	
Social competence		X	

last amended: May 2026

BR 1 WPF_5 Module from any Master Study Course at Rhine-Waal University of Applied Sciences (elective)

Study semester: Summer term (full time) **Credit Points (ECTS):** 5
Summer term 2 (part time)

Workload

Contact time		Self-study	
	45 h	Preparation for contact time	35 h
		Literature review	35 h
		Preparation for exams	35 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Module coordinator

Prof. Dr. Peter F. W. Simon

Lecturers

All lecturers of the university

Teaching contents

Depending on the chosen module to be elected from all study courses of Rhine-Waal University

Learning objectives

On successful completion of this module, students should

- have acquired knowledge from other areas of the university and deepened or enlarged their horizon¹
- understand the importance of getting information beyond their specialisation²
- be able to implement alternative ways and approaches to problem solving³
- be able to compare contents and learning outcomes of other study courses with their own achievements⁴

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Depending on chosen module

Entrance requirements

Depending on chosen module

Reading list

Depending on chosen module

Examination in summer term 2027

graded exam: depends on module chosen

Teaching materials and media

Depending on chosen module

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence		X	
Social competence			X

last amended: May 2026

Study semester:	Winter term (full time)	Credit Points (ECTS):	5
	Winter term 1 (part time)		

Workload

Contact time		Self-study	
Lecture	45 h	Preparation for contact time	30 h
Exercise	15 h	Literature review	30 h
		Preparation for exams	30 h
Sum	60 h	Sum	90

Total workload: 150 h

Module coordinator

Prof. Dr. Tobias Wünscher

Lecturers

Dr. Eleydiane Maria Gomes Vale

Teaching contents

Natural and environmental resources often constitute public goods for which market prices are lacking. Methods for valuation of non-market goods (e.g., contingent valuation, choice experiments, hedonic pricing, travel cost) will be introduced to assess internal and external costs and benefits of natural resources. Students will learn methods of private and social cost benefit analysis. Public programs and policies are interventions that target specific goals such as governance of natural resource use and beneficiaries. Impact assessments are done to understand whether these interventions work, how well they work and what does not work. Building on environmental valuation tools the course introduces ex post and ex ante evaluation as well as qualitative and quantitative methods of impact assessment.

Learning objectives

On successful completion of this module, students should

- be able to identify and describe key concepts, assumptions, and theoretical foundations of environmental valuation, non-market good valuation, cost–benefit analysis, and impact assessment¹
- be able to explain the rationale for valuing non-market goods and the role of valuation, cost–benefit analysis, and impact assessment in public policy and natural-resource management²
- be able to apply appropriate valuation methods, cost–benefit analysis tools, and basic impact-assessment techniques to concrete environmental and policy-relevant case studies³
- be able to analyse ex ante and ex post evaluations of public programs by assessing data needs, methodological choices, externalities, and distributional impacts⁴
- be able to evaluate the strengths, limitations, and ethical implications of different valuation and impact-assessment methods for informing public decision-making and governance of natural resources⁵

- Design a coherent environmental valuation or impact-evaluation study—including research questions, methodological approach, data-collection strategy, and analytical plan—and justify methodological choices⁵.
- Communicate analytical results and policy implications clearly and professionally in written and/or oral form following scientific standards⁵.

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; case studies with data; exercises using statistical software such as R

Entrance requirements

Mandatory: None

Recommended: Simulation of Biological Systems

Reading list

Kolstad: Environmental Economics

Garrod and Willis: Economic Valuation of the Environment: Methods and Case Studies

Khandker, Koolwal and Samad: Handbook on Impact Evaluation: Quantitative Methods and Practices.

Selected material from 3IE – International Initiative for Impact Evaluation, <http://www.3ieimpact.org/>

Further reading material will be distributed during the course.

Examination in winter term 2026/27

graded exam: 1. written exam in presence (60%); 2. oral presentation (25%); 3. home assignment (15%)

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart; visualisation aids for presentation; data sheets; computer/laptop; demonstration materials; A/V media

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence		X	

Last amended: May 2026

Study semester:	Winter term (full time)	Credit Points (ECTS):	5
	Winter term 1 (part time)		

Workload

Contact time		Self-study	
Lectures	30 h	Preparation for contact time	30 h
Lab course/Field course	30 h	Literature review	30 h
		Preparation for exams	30 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr. habil. Jens Gebauer

Lecturers

Prof. Dr. habil. Jens Gebauer

Teaching contents

This module covers different aspects of underutilized plant genetic resources such as taxonomy, morphology, physiology, biochemistry, genetics, cytology and ethnobotany. It includes examples from gene bank management: collecting, maintenance, evaluation, storage and documentation. Areas of interest include crop evolution, domestication, crop-weed relationships, agrobiodiversity related wild species and the history of cultivated plants including palaeoethnobotany. Wild fruit tree species will play a key role to understand utilisation, promotion and conservation strategies of underutilized plant resources.

Learning objectives

On successful completion of this module, students should

- know the different aspects and their underlying methods of plant genetic resources¹
- have extensive botanical knowledge on plant genetic resources¹
- be able to identify, characterise and maintain plant genetic resources^{3,4}
- be able to set up research strategies to utilise, promote and conserve plant genetic resources⁵

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; excursion; feedback

Entrance requirements

Basic knowledge in botany

Reading list

Akinnifesi et al.: The fruits of success: A programme to domesticate West and Central Africa's wild fruit trees is raising incomes, improving health and stimulating the rural economy
Chittaranjan: Wild Crop Relatives: Genomic and Breeding Resources
Collins and Qualset: Biodiversity in Agroecosystems
Hancock: Plant evolution and the origin of crops species
Kumar and Nair: Tropical homegardens a time-tested example of sustainable agroforestry
Leakey: Living with the trees of life towards the transformation of tropical agriculture
Journal of Genetic Resources and Crop Evolution
Journal of Plant Genetic Resources: Characterization and Utilisation
Wickens and Lowe: The Baobabs: Pachycauls of Africa, Madagascar and Australia

Examination in winter term 2026/27

graded exam: written exam, 120 minutes
certificate for lab course

Teaching materials and media

Tropical greenhouse and study gardens; gene bank; beamer; white/black board; scientific papers; flipchart

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence		X	
Social competence			X

last amended: May 2026

Study semester:	Winter term (full time)	Credit Points (ECTS):	5
	Winter term 2 (part time)		

Workload

Contact time		Self-study	
Lecture	30 h	Preparation for contact time	30 h
Lab course/Field course	30 h	Literature review	30 h
		Preparation for exams	30 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr. Florian Kugler

Lecturers

Prof. Dr. Florian Kugler; Prof. Dr. Petra Blitgen-Heinecke

Teaching contents

Lecture:

Basic procedural, chemical, and microbiological operations and techniques; nature of essential raw materials of plant/animal and microbiological origin; secondary (plant) metabolites; processing of selected raw materials; recovery of valuable components from by-products and waste resulting from food industry; fermentation processes

Practical part:

Production of sugar from sugar beet; extraction of betalains from red beetroot; production of plant oil from plant seeds; purification of plant oil; fermentation of sugar and alcohol distillation; hydrolysis of sucrose into invert sugar; extraction of chitin from tiger prawns; conversion of chitin to chitosan films

Learning objectives

On successful completion of this module, students should

- know and understand the nature of important biological raw materials¹
- know the basics about main processing methods applied in food industry and biotechnology¹
- know relevant examples for utilization of by-products and waste resulting from food industry²
- be able to apply the knowledge in developing solutions for case studies with regard to food processing and biotechnology³
- be able to critically discuss possibilities, challenges and shortcomings of processing biological resources under particular socio-economic and cultural circumstances^{4,5}
- be able to consider the social, ecological and ethical impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; case studies; lab course

Entrance requirements

Basic knowledge in chemistry, biology, and physics

Reading list

Reading list will be provided by lecturers.

Examination in winter term 2026/27

graded exam: written exam, 120 minutes
certificate for lab course

Teaching materials and media

Projector, whiteboard, flipchart, hand-outs, demonstration materials, lab/pilot plant equipment, visualisation aids for presentation, A/V media

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence			X

last amended: May 2026

Study semester:	Winter & Summer Term (full time)	Credit Points (ECTS):	5
	Winter & Summer Term (part time)		

Workload

Contact time		Self-study	
Lecture	30 h	Preparation for contact time	30 h
Seminar	30 h	Literature review	30 h
		Preparation for exams	30 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr. Natalie Laibach

Lecturers

Prof. Dr. Natalie Laibach, N.N

Teaching contents

In this lecture series students will be exposed to interdisciplinary perspectives on biological resources and their management. Invited lecturers will present results and methodological approaches of their recent research and professional work in the field of biological resources and related disciplines. The lectures will provide participants with the opportunity to experience and engage in academic debate thereby obtaining further stimuli to define the topic of their own research project. The students will also learn how to approach a research topic or problem and how to develop a research project idea.

Learning objectives

On successful completion of this module, students should

- understand core concepts of global biological resources and their sustainable management^{1,2}
- know the predominant discourses and theories in managing and governing these resources²
- know methods and analytical tools used in contemporary research on biological resources²
- be able to identify the key factors that determine the state and resilience of global biological resources^{3,4}
- be able to document results and findings in a scientifically appropriate form^{4,5}
- be able to formulate research questions, objectives and central hypothesis of a research project and to write a proposal for their master thesis^{3,5}

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; excursions; exercises

Entrance requirements

None

Reading list

Publications by the lecturers on the pertinent topic

Examination in summer term 2026 and winter term 2026/27

certificate: 1. research proposal; 2. continuous assignments

The ECTS will be credited during semester 3.

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence		X	
Social competence			X

last amended: May 2026

Study semester:	Winter term (full time)	Credit Points (ECTS):	5
	Winter term 1 (part time)		

Workload

Contact time		Self-study	
Lectures	45 h	Preparation for contact time	30 h
Seminar	15 h	Literature review	20 h
		Preparation for exams	40 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr. Simone Pauling

Lecturers

Prof. Dr. Simone Pauling

Teaching contents

Life cycle assessment helps to align decisions with ecological criteria and reduce environmental impacts. Students learn about sustainability in biological resource value chains. Students apply the methods of ecological (= life cycle assessment), economic and social life cycle analyses to bio-based value chains. Students learn how to conduct life cycle inventory analysis and environmental impact assessment. Students are able to describe and analyse the given biobased value chains in terms of their material flows, energy expenditure and yields, environmental impact, life cycle costs and social indicators. They use the results of these analyses to develop recommendations for action for sustainable optimisation.

Learning objectives

On successful completion of this module, students should

- know principles of sustainability assessment in biobased value chains¹
- know the basic structure of Life Cycle Assessment¹
- know the purpose and scope of different methods of environmental/sustainability assessment¹
- be able to identify main environmental hotspots in biobased value chains using LCA²
- be able to conduct an inventory analysis of selected biobased value chains³
- be able to select appropriate impact assessment methods in LCA for selected biobased value chains³
- be able to analyse and interpret the results of LCA^{4&5}
- be able to consider the social and ecological impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}
- be able to document results and findings in a scientifically appropriate form^{4&5}

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; exercises, LCA Software, Databases

Entrance requirements

None

Reading list

Hauschild, Rosenbaum and Olsen: Life Cycle Assessment Theory and practice

Klöpffer and Grahl: Life Cycle Assessment A Guide to best practice

Subramanian Senthilkannan Muthu: Social Life Cycle Assessment – Case Studies from Agri and Food Sectors

Additional reading material will be provided during the course.

Examination in winter term 2026/27

graded exam: 1. written exam, 120 minutes (80%); 2. paper/presentation (20%)

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart; visualisation aids for presentation; demonstration materials, group work, presentation, simulation software, databases

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence		X	

last amended: May 2026

Study semester:	Winter term (full time)	Credit Points (ECTS):	5
	Winter term 2 (part time)		

Workload

Contact time		Self-study	
Seminar	45 h	Preparation for contact time	50 h
		Literature review	25 h
		Preparation for exams	30 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Module coordinator

Prof. PD Dr.-Ing. Sylvia Moenickes

Lecturers

Prof. PD Dr.-Ing. Sylvia Moenickes

Teaching contents

Depending on the background of the participants, an environmental system and related modelling strategy is chosen. Coding is carried out in Matlab / R.

Example:

- Climate change modelling: Global cycles of energy and matter as C, N, P, and Water. Their couplings in biosphere and geosphere. Competition and temperature response. Constitutive differential equations. System behaviour: steady state, stability of steady states, attractants, repellors, point of no return, chaotic behaviour;
- Agroecology: Crop growth, plant protection, fertilization management. Cellular automata, individual based models, agent-based models; Monte Carlo methods; emergence, collective intelligence, robustness; statistics based interpretation,
- Hybrid modelling

Learning objectives

On successful completion of this module, students should

- know fluxes and states in compartment models and their mathematical representation¹
- understand the effect of natural and anthropogenic couplings²
- be able to make use of Matlab for steady state simulations and projections of anthropogenic effects³
- be able to design and implement mathematical representations of countermeasures⁴
- be able to evaluate simulated effects of land use⁵

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; seminar; self-study; group work; case studies

Entrance requirements

none

Reading list

Literature will be distributed in the course

Examination in winter term 2026/27

graded exam: assignments

Teaching materials and media

Beamer; white/black board; hand-outs; lab equipment; flipchart; visualisation aids for presentation; demonstration materials; A/V media

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence			X

last amended: May 2026

Study semester:	Winter term (full time)	Credit Points (ECTS):	5
	Winter term 2 (part time)		

Workload

Contact time		Self-study	
Lecture	30 h	Preparation for contact time	40 h
Exercise	15 h	Literature review	25 h
		Preparation for exams	40 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Module coordinator

Prof. Dr. Marcel Friedrich

Lecturers

Prof. Dr. Marcel Friedrich

Teaching contents

From the idea to the concept and business plan: Development of business ideas, business analysis and description of requirements (personal conditions, market assessment, competitive environment). Planning within the phase of starting a new venture (finance, cost, revenue, profitability, liquidity), forms of financing as well as the choice of legal form or company structure

Learning objectives

On successful completion of this module, students should

- have a perception of entrepreneurship as career perspectives^{1,2}
- know the necessities, prerequisites and measures to start a business^{1,2,4}
- have achieved a basic knowledge about how to construct a business plan and have gained experiences toward starting a business in the future^{1,2,3,4,5}
- know prospects and entrepreneurial responsibilities in the context of starting a new venture^{1,2,4,5}
- be able to consider the social and ecological impact of professional decisions^{2,3} and thus deepen their capacity to engage in society^{2,3}
- be qualified for management and leadership tasks in the above-mentioned areas³

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; projects and / or case studies

Entrance requirements

None

Literature

Mariotti and Glacking: Entrepreneurship and Small Business Management
Bygrave and Zacharakius: Entrepreneurship
Osterwalder and Pigneur: Business Model Generation

Examination in winter term 2026/27

graded exam: 1. presentation; 2. seminar paper

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart; moderation materials

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence		X	
Methodological competence	X		
Social competence		X	

last amended: May 2026

Study semester:	Winter term (full time)	Credit Points (ECTS):	5
	Winter term 2 (part time)		

Workload

Contact time		Self-study	
Lecture	30 h	Preparation for contact time	20 h
Lab course	30 h	Literature review	25 h
		Preparation for exams	45 h
Sum	60 h	Sum	90 h

Total workload: 150 h

Module coordinator

Prof. Dr.-Ing. Frank Platte

Lecturers

Dr. Stefan Weber

Teaching contents

Lecture:

Principles and applications of most important methods; basics of spectroscopy; UV/VIS-spectroscopy/spectrophotometry; vibrational spectroscopy: infrared and Raman spectroscopy; molecular fluorescence spectroscopy; chromatography: HPLC, DC, GC; mass spectrometry; nuclear magnetic resonance spectroscopy (NMR)

Lab course:

Determination of analytes' concentration by UV/Vis-spectrophotometry using calibration curves, determination of equilibrium constant and equivalence point by spectrophotometry, analysis of UV/Vis, IR, Raman and NMR spectra, interpreting mass spectrometric data, demonstration of chromatographic techniques

Learning objectives

On successful completion of this module, students should

- know the theoretical basis of various spectroscopic, chromatographic and further instrumental analysis methods^{1,2}
- be able to select appropriate methods in order to solve a given analytical task^{2,3}
- be able to understand and to estimate the opportunities of new analytical methods²
- be able to analyse and to judge measurement results^{4,5}
- be able to analyse UV/Vis, IR, Raman and NMR spectra^{3,4}
- be able to interpret mass spectrometry data^{2,4,5}
- be able to choose an appropriate method for measuring renewable resources (amount, purity, physical properties, ...) ^{2,4,5}

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Lecture; self-study; group work; lab course

Entrance requirements

None

Literature

Gregoriou: Vibrational Spectroscopy of Biological and Polymeric Materials

Petrozzi: Practical Instrumental Analysis: Methods, Quality Assurance, and Laboratory Management

Examination in winter term 2026/27

graded exam: 1. written exam, 60 minutes, 2. presentation

certificate for lab course

Teaching materials and media

Beamer; white/black board; hand-outs; flipchart; visualisation aids for presentation; demonstration material

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence		X	

last amended: May 2026

BR 2 WPF_6 Module from any Master Study Course at Rhine-Waal University of Applied Sciences (elective)

Study semester: Winter term (full time) **Credit Points (ECTS):** 5
Winter term 2 (part time)

Workload

Contact time		Self-study	
	45 h	Preparation for contact time	35 h
		Literature review	35 h
		Preparation for exams	35 h
Sum	45 h	Sum	105 h

Total workload: 150 h

Module coordinator

Prof. Dr. Peter F. W. Simon

Lecturers

All lecturers of the university

Teaching contents

Depending on the chosen module to be elected from all study courses of Rhine-Waal University

Learning objectives

On successful completion of this module, students should

- have acquired knowledge from other areas of the university and deepened or enlarged their horizon¹
- understand the importance of getting information beyond their specialisation²
- be able to implement alternative ways and approaches to problem solving³
- be able to compare contents and learning outcomes of other study courses with their own achievements⁴

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Depending on chosen module

Entrance requirements

Depending on chosen module

Reading list

Depending on chosen module

Examination in winter term 2026/27

graded exam: depends on module chosen

Teaching materials and media

Depending on chosen module

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence		X	
Social competence			X

last amended: May 2026

Study semester:	Semester 3 (full time)	Credit Points (ECTS): 25
	Semester 5 and 6 (part time)	

Workload

Contact time		Self-study	
Sum		Sum	750 h

Total workload: 750 h

Module coordinator

Prof. Dr. Marcel Friedrich

Lecturers

All lecturers of the faculty

Teaching contents

The contents of the master thesis are specific and have to be coordinated with the chosen/elected instructor/lecturer. The assigned task will be adequately described and documented as well as the chosen approach, methodology and results.

Learning objectives

On successful completion of this module, students should

- demonstrate that they are able to complete a scientific task from their field of study without help and within an allotted period of time
- apply/implement technical knowledge in a scientifically appropriate way
- structure the necessary processes and tasks necessary for solving the conceptual formulation, control their progress and adjust if necessary
- be able to document their starting point, the chosen approach and their findings in such a way that they fulfil the requirements of a scientific publication

¹Knowledge; ²Comprehension; ³Application; ⁴Analysis; ⁵Synthesis and judgement

Teaching and learning methods

Entrance requirements

Minimum of 50 ECTS

Reading list

Depending on chosen subject/task

Examination

graded exam: written thesis of approx. 50–120 pages

Teaching materials and media

Thesis-specific

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence			

last amended: May 2026

BR 3 5082 Colloquium

Study semester: Semester 3 (full time)
Semester 6 (part time) **Credit Points (ECTS):** 5

Workload

	Contact time		Self-study
Sum		Sum	150 h

Total workload: 150 h

Module coordinator

Prof. Dr. Marcel Friedrich

Lecturers

All lecturers of the faculty

Teaching contents

The content of the colloquiums is based on the master thesis.

Learning objectives

The students present the results of their master thesis during the colloquium. They put their research and findings in a context with the practical approach and present their findings in a scientific and structured way. The students justify their chosen approach autonomously by taking into consideration how far their results were influenced by assumptions/presuppositions and simplifications. They are able to analyse questions regarding their thesis and their findings and to answer these within the frame of the technical and non-technical context.

Teaching and learning methods

Entrance requirements

Minimum of 85 ECTS

Reading list

Examination

graded exam: oral presentation and exam, max. 45 minutes

Teaching materials and media

Specific

Areas of competence

Area of competence	Core area	Partly relevant	Of minor relevance
Professional competence	X		
Methodological competence	X		
Social competence			

last amended: May 2026