HOCHSCHULE
RHEIN-WAAL
Rhine-Waal University
of Applied Sciences

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

April 2026

valid for all students enrolled
from WS 2019/20 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	PROGRAMM AKKREDITIERT Akkreditierungsrat

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

Module Code/ Modulcode	Subjects/Module	CH	Type					Ex/Prü		ECTS points	ST	WT	Sem 3	
			L	S	E	Pra	Pro	graded	attestation					
BR 1 5001	Simulation of biological systems Simulation biologischer Systeme	4	2		2			P		5	4			
BR 1 5002	Animal ecology and ecosystem services Tierökologie und Ökosystemdienstleistungen	4	2			2		P	T	5	4			*
BR 1 5003	Soil biological resources Bodenbiologische Ressourcen	4	1	1		2		P	T	5	4			*
BR 1 5004	Closing cycles: Use and reduction of by-products Schließen von Kreisläufen: Verwendung und Reduzierung von Abfallprodukten	4	2			2		P	T	5	4			*
	Elective module 1 Wahlpflichtkatalog 1	3	3					P		5	3			
BR 1 5005	Research project Angewandtes Forschungsprojekt	4					4		T	5	4			
BR 2 5021	Environmental valuation and economic impact assessment Umweltbewertung und ökonomische Folgenabschätzung	4	1	1	2			P		5		4		
BR 2 5022	Forest management and governance Bewirtschaftung und Management forstlicher Ressourcen	4	2	2				P		5		4		
BR 2 5023	Underutilized plant resources Unternutzte Pflanzenressourcen	4	2			2		P	T	5		4		*
BR 2 5024	Processing biological resources Verarbeitung biologischer Ressourcen	4	2			2		P	T	5		4		*
	Elective module 2 Wahlpflichtkatalog 2	3	3					P		5		3		
BR 2 5025	Lecture Series Biological Resources Ringvorlesung Biologische Ressourcen	4	2	2					T	5		4		
BR 3 5081	Master Thesis Masterarbeit							P		25			X	
BR 3 5082	Colloquium Kolloquium							P		5			X	
	Semesterwochenstunden / hours per week		**22**	**6**	**4**	**10**	**4**		**SWS**		**23**	**23**		
									CP	**90**	**30**	**30**	**30**	

total		1.Sem	2.Sem	3.Sem
CH	0	23	23	
ECTS points	90	30	30	30

Abkürzungen // Abbreviations

CH = credit hours per week // SWS = Semesterwochenstunden
Ex/Prü = type of examination // Prüfungsart
ECTS points = European Credit Transfer System credit points
// Leistungspunkte nach dem Europäisches System zur Übertragung und Akkumulierung von Studienleistungen
L = Lecture // Vorlesung
S = Seminar
E = Exercise // Übung
Pra = lab course // Praktikum
Pro = project // Projekt
T = certificate // Testat (unbenotet)
P =examination (graded)// benotete Prüfung

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

											part time study / berufsbegleitendes Studium					
Module Code/ Modulcode	Module/Subjects	CH	Type					Ex/Prü		ECTS points	ST 1	ST 2	WT 1	WT 2	Sem 5	Sem 6
			L	S	E	Pra	Pro	graded	attestation							
BR 1 5001	Simulation of biological systems Simulation biologischer Systeme	4	2		2			P		5	4					
BR 1 5002	Animal ecology and ecosystem services Tierökologie und Ökosystemdienstleistungen	4	2			2		P	T	5	4					*
BR 1 5003	Soil biological resources Bodenbiologische Ressourcen	4	1	1		2		P	T	5	4					*
BR 1 5004	Closing cycles: Use and reduction of by-products Schließen von Kreisläufen: Verwendung und Reduzierung von Abfallprodukten	4	2			2		P	T	5			4			*
	Elective module 1 Wahlpflichtkatalog 1	3	3					P		5			3			
BR 1 5005	Research project Angewandtes Forschungsprojekt	4					4		T	5			4			
BR 2 5021	Environmental valuation and economic impact assessment Umweltbewertung und ökonomische Folgenabschätzung	4	1	1	2			P		5		4				
BR 2 5022	Forest management and governance Bewirtschaftung und Management forstlicher Ressourcen	4	2	2				P		5		4				
BR 2 5023	Underutilized plant resources Unternutzte Pflanzenressourcen	4	2			2		P	T	5		4				*
BR 2 5024	Processing biological resources Verarbeitung biologischer Ressourcen	4	2			2		P	T	5				4		*
	Elective module 2 Wahlpflichtkatalog 2	3	3					P		5				3		
BR 2 5025	Lecture Series Biological Resources Ringvorlesung Biologische Ressourcen	4	2	2					T	5				4		
BR 3 5081	Master Thesis Masterarbeit							P		25						X
BR 3 5082	Colloquium Kolloquium							P		5						X
	Semesterwochenstunden / hours per week	**46**	**22**	**6**	**4**	**10**	**4**				**12**	**12**	**11**	**11**		
											15	**15**	**15**	**15**	**30**	

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

Abkürzungen // Abbreviations

CH = credit hours per week // SWS = Semesterwochenstunden

Ex/Prü = type of examination // Prüfungsart

ECTS points = European Credit Transfer System credit points // Leistungspunkte nach dem Europäisches System zur Übertragung und Akkumulierung von Studienleistungen // Leistungspunkte nach dem Europäisches System zur Übertragung und Akkumulierung von Studienleistungen

L = Lecture // Vorlesung

S = Seminar

E = Exercise // Übung

Pra = lab course // Praktikum

Pro = project // Projekt

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P = examination (graded) // benotete Prüfung

			Type						
	Elective modules 1 **Wahlpflichtkatalog 1**	**CH**	**L**	**S**	**E**	**Pra**	**Pro**	**Ex**	**ECTS points**
BR 1 5041	Biological resource value chains and sustainability management Wertschöpfungsketten und Nachhaltigkeitsmanagement biologischer Ressourcen	3	1	1	1			P	5
BR 1 5042	Marine bioresources Biologische Ressourcen der Meere	3		3				P	5
BR 1 5043	Use of diversity in a changing world Nutzung von Diversität in einer sich ändernden Welt	3		2		1		P	5
BR 1 5044	Entrepreneurship and business management Existenzgründung und Unternehmensführung	3		3				P	5
BR 1 5045	Innovation management Innovationsmanagement	3	2		1			P	5
BR 1 WPF_5	Module from any master study course at Rhine-Waal University of Applied Sciences Wahlmöglichkeit aus dem gesamten Masterangebot HRW	3	3					P	5 **
	1 elective module amounts to 1 Wahlpflichtmodul ergibt								5

	Elective modules 2 **Wahlpflichtkatalog 2**	**CH**	**L**	**S**	**E**	**Pra**	**Pro**	**Ex**	**ECTS points**
BR 2 5061	Animals in bioeconomy Nutztiere in der Bioökonomie	3	2		1			P	5
BR 2 5062	Environmental Systems Analysis Umweltsystemanalyse	3		3				P	5
BR 2 5063	Rhizosphere biology Rhizosphärenbiologie	3				3		P	5
BR 2 5064	Business planning Business planning	3	2	1				P	5
BR 2 WPF_6	Module from any master study course at Rhine-Waal University of Applied Sciences Wahlmöglichkeit aus dem gesamten Masterangebot HRW	3	3					P	5 **
	1 elective module amounts to 1 Wahlpflichtmodul ergibt								5

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. / Die Fakultät behält sich das Recht vor, eine Mindestteilnehmerzahl für das Zustandekommen eines Wahlpflichtkurses festzulegen. Die Zulasung zu Pflichtmodulen erfolgt vorbehaltlich freier Kapazitäten. Die Möglichkeit des Erreichens der vorgeschriebenen Kreditpunktzahl bleibt unberührt.

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. / Die Fakultät behält sich vor, das Wahlpflichtangebot im Laufe der Zeit bei neuen Entwicklungen in verschiedenen Feldern der Biological Resources durch weitere Fächer zu erweitern.

** The actual selection from any study programme of the Rhine-Waal University has to be approved by the Examination Committee of the Faculty of Life Sciences. Module code and module description of the module chosen will be used. // Die konkrete Auswahl aus dem Studienangebot der Hochschule bedarf der Zustimmung des Prüfungsausschussvorsitzenden. Modulcode und Modulbezeichnung entsprechen dem gewählten Modul.

Table of Content

BR 1 5001 Simulation of Biological Systems

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

Workload

Contact time		Self-study	
Seminars	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. Dr. Henrik Rudolf

Teaching contents

Models: Cellular automata, individual based models, agent-based models; Monte Carlo methods; emergence, collective intelligence, robustness; statistics based interpretation

Programming: basic elements of Matlab code such as loops, conditions, arrays, plotting

Learning objectives

On successful completion of this module, students should

- know properties of different models, systems, and statistical tools for interpretation[1]
- understand basic Matlab code[2]
- be able to describe and implement models[3]
- be able to read implemented models, run these models in a meaningful way for different scenarios and interpret[4]
- be able to make clear statements on model-based projections.[5]

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

Teaching and learning methods

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

Entrance requirements

None

Reading list

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: April 2026

BR 1 5002 Animal Ecology and Ecosystem Services

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

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. William Megill

Lecturers

Prof. Dr. William Megill; 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 ecosystem[1]
- 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 processes[4]
- be able to assess the relative importance of abiotic factors influencing animal ecosystems in contrast to biotic factors from within the systems[1]
- 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 diversity[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]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes; certificate for lab course

Teaching materials and media

Projector; 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: April 2026

BR 1 5003 Soil Biological Resources

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

Workload

Contact time		Self-study	
Lectures	15 h	Preparation for contact time	30 h
Seminar	15 h	Literature review	30 h
Lab course	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

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 uses[1]
- know how soil biota is influenced by environmental and human abiotic and biotic factors[1]
- be able to relate their knowledge about soil resources to its relevance in the bioeconomy and land use[2]
- be able to apply special analytical lab procedures of soil ecology and microbiology in lab experiments[3]
- be able to analyse and document results and findings in a scientifically appropriate form[4]
- be able to analyse how their data compare with the data of others[4]
- be able to evaluate the potential of soil biological resources in biotechnology and land use[5]
- be able to critically discuss options of a sustainable use of soil biological resources *ex situ* and *in situ*[5]

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

Teaching and learning methods

Lab course; field trip; lecture; self-study

Entrance requirements

None

Reading list

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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes; 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: March 2022

BR 1 5004 Closing Cycles: Use and Reduction of By-products

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

Workload

Contact time		Self-study	
Lectures	30 h	Preparation for contact time	50 h
Lab course/Field course	30 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]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes; 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: November 2019

BR 1 5041 Biological Resource Value Chains and Sustainability Management

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

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

Mario Kerst, M.Sc.

Teaching contents

Value chains link producers and consumers; along the chains firms create value for competitive advantage. 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. 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 alternative approaches to environmental and sustainability accounting, reporting and management of sustainable agrifood and biological resource value chains.

Learning objectives

On successful completion of this module, students should

- know selected models of institutional economics and industrial organization[1]
- know principles of value chain analysis[1]
- know principles of environmental and sustainability accounting and reporting[1]
- know quality and sustainability management systems[1]
- be able to relate their knowledge to agrifood and biological resource value chains[2]
- be able to apply value chain analysis and environmental and sustainability accounting and reporting methods to the study of agrifood and biological resource value chains [3&4]
- 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 chains[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 areas[3]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: April 2026

BR 1 5042 Marine Bioresources

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

Workload

Contact time		Self-study	
Seminar	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. William Megill

Lecturers

not on offer in summer term 2026

Teaching contents

This course focuses on marine organism groups and environments, with a particular focus on coastal ecosystems and marine mammals. The course has the following parts: Introduction to marine biodiversity; basic taxonomy, identification techniques, identification literature and reference collections; Marine inventory methodology; specific techniques for the study of community ecology in the marine environment, quantification of biological diversity, potential for sustainable use of marine bioresources; Marine environments; marine biotopes (e.g. shallow/deep hard/soft bottoms, coral reefs, pelagial, interstitial environments, hydrothermal vents) and their characteristic ecological communities; Marine organism groups; systematics and morphology of mainly animals, but also marine plants, macro algae, eukaryotic microbes, archaea, bacteria, different adaptations to marine environments and potential as possible bioresources; Role of marine mammals in the coastal and offshore ecosystem. Marine mammals as beaters and/or indicators of localized bioresource stress. Marine mammals as a bioresource themselves: whaling vs marine ecotourism.

Learning objectives

On successful completion of this module, students should

- be able to identify and name common macroscopic species from the North Atlantic, with special focus on the North Sea
- be able to recognise the larger organism groups and classify marine organisms to group
- be able to identify marine organisms using appropriate literature
- be able to identify and differentiate the characteristics of marine biotopes
- be able to discuss taxonomic bases and apply these within the framework of marine inventories
- understand the special role played by the marine mammals in the marine ecosystem
- be able to discuss the underlying factors (physical, biological, geographic and historical) that influence the biological diversity in marine environments

- 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]

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

Teaching and learning methods

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

Entrance requirements

None

Reading list

Lecture notes, Moodle, online resources

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: April 2026

BR 1 5043 Use of Diversity in a Changing World

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

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. Steffi Wiedemann

Lecturers

Prof. Dr. Natalie Laibach; Prof. Dr. William Megill

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; 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 consider the social and ecological impact of professional decisions[2,3] and thus deepen their capacity to engage in society[2,3]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: April 2026

BR 1 5044 Entrepreneurship and Business Management

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

Workload

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

Total workload: **150 h**

Module coordinator

N.N.

Lecturers

Dr. Eleydiane Maria Gomes Vale

Teaching contents

Participants will take over the leadership of a simulated company and face the challenge of making important business decisions in the area of all key functions of a business corporation, including procurement and production, human resource management, research and product development, and marketing and sales. The simulation also addresses the topics of product life cycle, personnel competence, productivity, reengineering, environmental aspects, corporate identity and shareholder value-oriented management.

Learning objectives

On successful completion of this module, students should

- understand the fundamentals and concepts of core business functions[1,2]
- define economic goals and strategies and implement them in a dynamic environment[2,3]
- learn to use business tools like cost accounting and income analysis to make operational business decisions for a simulated company[3]
- analyse financial figures and operational results of previous business periods and adjust the overall business strategy to changing economic conditions[4,5]
- define and solve problems in teams with the aid of data-processed planning models[5]
- 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 areas[3]

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

Teaching and learning methods

Computer-based management simulation; self-study; group work and presentation

Entrance requirements

None

Reading list

TOPSIM – Participants manual “General Management”

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor’s and Master’s Degree Programmes

Teaching materials and media

Business simulation game; projector; 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: April 2026

BR 1 5045 Innovation Management

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

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

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 management[1]
- understand the need for and nature of innovation[2]
- 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 areas[3]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: November 2019

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

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

Workload

Contact time		Self-study	
Lectures	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 horizon[1]
- understand the importance of getting information beyond their specialisation[2]
- be able to implement alternative ways and approaches to problem solving[3]
- be able to compare contents and learning outcomes of other study courses with their own achievements[4]

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

Teaching and learning methods

Depending on chosen module

Entrance requirements

Depending on chosen module

Reading list

Depending on chosen module

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

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: November 2019

BR 1 5005 Research Project

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

Workload

Contact time		Self-study	
Seminar	10 h	Preparation for contact time	40 h
Project	20 h	Literature review	40 h
		Preparation for exams	40 h
Sum	30 h	Sum	120 h

Total workload: **150 h**

Module coordinator

Prof. Dr. Marcel Friedrich

Lecturers

Various lecturers

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 chosen[1]
- have further advanced their ability to search and summarize scientific literature in the relevant field of research independently[2]
- have further advanced their ability to organise and manage a project[2]
- be able to apply relevant scientificmethods[3]
- be able to present and document results and findings in a scientific report/article[4]
- be able to analyse in depth how their findings are related to those of others[4]
- be able to critically evaluate the scientific methods used[5]
- be able to critically discuss their findings in the context of biological resource use and management[5]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Certificate according to §§ 14 and 20 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: November 2019

BR 2 5021 Environmental Valuation and Economic Impact Assessment

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

Workload

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

Total workload: **150 h**

Module coordinator

N.N.

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 on non-market goods will be introduced to assess internal and external costs and benefits of natural resource use. 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.

Students will work with case studies and data for valuation of non-market goods; students will work with case studies and data to assess impact of public programs and policies.

Learning objectives

On successful completion of this module, students should

- know the relevant concepts of valuation of non-market goods and cost benefit analysis[1]
- know the relevant concepts and principles of impact evaluation[1]
- be able to relate their knowledge in natural & environmental resource valuation cost benefit analysis and impact assessment to aspects of public program and policy design[2]
- be able to apply their knowledge by designing impact evaluation as well as valuation studies[3]
- be able to apply valuation methods of non-market goods, cost benefit analysis and impact assessment methods[3,4]
- be able to document results and findings in a scientifically appropriate form[4,5]
- 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 areas[3]

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

Teaching and learning methods

Lecture; self-study; case studies, exercises

Entrance requirements

None

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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor and Master's Degree Programmes

Teaching materials and media

Projector; 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: October 2022

BR 2 5022 Forest Management and Governance

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

Workload

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

Total workload: **150 h**

Module coordinator

N.N.

Lecturers

William Dumenu

Teaching contents

Global scale and importance of forests; forest types, functions and services; introduction to forest growth, forest inventory and management planning; management of natural forests; plantation forestry; agroforestry; timber use, forest certification and timber trade; non-timber forest products; forests and nutrition; interests and conflicts in the forest sector; instruments of forest policy; global forest governance; forests and climate change; forests in the bioeconomy

Learning objectives

On successful completion of this module, students should

- know the relevant concepts and principles of forest management, forest economics and forest policy[1]
- understand socio-economic theories and conceptual frameworks of forestry science and the current state of pertinent research[2]
- be able to apply methods and analytical tools of forest economics and policy to contemporary problems of global forest management[3,4]
- be able to document results and findings in a scientifically appropriate form[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 areas[3]

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

Teaching and learning methods

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

Entrance requirements

None

Reading list

Innes and Tikina: Sustainable forest management – from concept to practice
Kant and Alavalapati: Handbook of forest resource economics
Krott: Forest policy analysis

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; white/black board; hand-outs; 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: November 2023

BR 2 5023 Underutilized Plant Resources

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

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 resources[1]
- have extensive botanical knowledge on plant genetic resources[1]
- 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 resources[5]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor and Master's Degree Programmes; certificate for lab course

Teaching materials and media

Tropical greenhouse; botanical garden; gene bank; projector; 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: November 2019

BR 2 5024 Processing Biological Resources

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

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 materials[1]
- know the basics about main processing methods applied in food industry and biotechnology[1]
- know relevant examples for utilization of by-products and waste resulting from food industry[2]
- be able to apply the knowledge in developing solutions for case studies with regard to food processing and biotechnology[3]
- 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]

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

Teaching and learning methods

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

Entrance requirements

Basic knowledge in chemistry, biology, and physics

Reading list

Reading list will be provided by lecturers.

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor and Master's Degree Programmes; certificate for lab course

Teaching materials and media

Projector, white/black board, hand-outs, lab/pilot plant 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: October 2021

BR 2 5061 Animals in Bioeconomy

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

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**

Module coordinator

Prof. Dr. Steffi Wiedemann

Lecturers

N.N.

Teaching contents

Relevance of animals for bioeconomics (wildlife, farm animals, aquaculture, others); influence of biotic and abiotic factors on animal health, production and bioeconomics; management of biodegradable feedstocks such as manure, animal waste and associated matter fluxes from a bioeconomic perspective; effects of wildlife and of farm animals on the environment (e.g. production of greenhouse gases, sequestration of greenhouse gases in grassland, nutrient imbalances, landscape aspects); use of alternatives for food and feed production; determination of resource use efficiency and potential nutrient release using different techniques

Learning objectives

On successful completion of this module, students should

- understand the relevance of animals for bioeconomics[1]
- have a profound knowledge on the management of biological resources derived from animals[2]
- be able to apply methods to compare the resource use efficiency of different agricultural systems[3]
- be able to critically compare publications about animals in bioeconomics[4]
- be able to evaluate interactions of animal and bioeconomics based on acquired knowledge[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]

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

Teaching and learning methods

Lecture; self-study; group work; literature review

Entrance requirements

None

Reading list

Literature will be distributed in the course

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; white/black board; hand-outs; 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: October 2022

BR 2 5062 Environmental Systems Analysis

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

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

Global cycles of C, N, P, Water and their couplings. Constitutive equations. System behaviour: steady state, stability of steady states, attractants, repellors, point of no return, chaotic behaviour; Matlab-based simulation

Learning objectives

On successful completion of this module, students should

- know fluxes and states of carbon, nitrogen, phosphor and water and their mathematical representation[1]
- understand the effect of natural and anthropogene couplings[2]
- be able to make use of Matlab for steady state simulations and projections of anthropogene effects[3]
- be able to design and implement mathematical representations of countermeasures[4]
- be able to evaluate simulated effects of land use[5]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Master's Degree Programmes

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: October 2020

BR 2 5063 Rhizosphere Biology

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

Workload

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

Total workload: **150 h**

Module coordinator

Prof. Dr. Florian Wichern

Lecturers

Prof. Dr. Florian Wichern; Dr. Conor Watson

Teaching contents

Rhizosphere as an environment of autotrophic and heterotrophic interactions; monitoring root development, morphology and physiology in space and time; factors influencing root development; visualising and quantifying plant-microbe interactions; making use of rhizosphere processes in biotechnology and land use (e.g. phytoremediation, bioelectricity); using classical and modern visualisation techniques for qualitative and quantitative root assessment (e.g. root scanning, microscopy, molecular markers); collecting and analysing organic and inorganic components of root exudates and rhizosphere solution; experimental design and statistical analysis

Learning objectives

On successful completion of this module, students should

- know how roots develop in space and time and which factors influence their development[1]
- know how rhizosphere processes can be used in biotechnology and land use management[1]
- be able to relate their knowledge of rhizosphere processes to their relevance in the bioeconomy and land use[2]
- apply special analytical lab procedures of root ecology in lab experiments[3]
- be able to analyse and document results and findings in a scientifically appropriate form[4]
- be able to analyse how their data compare with the data of others[4]
- be able to evaluate and critically discuss the potential use of rhizosphere processes in biotechnology and land use[5]

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

Teaching and learning methods

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

Entrance requirements

None

Reading list

Luster and Finley (ed.) Handbook of methods used in rhizosphere research
Gregory: Plant roots
Various scientific publications for methods and comparison of results

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: November 2019

BR 2 5064 Business Planning

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

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

N.N.

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 areas[3]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

Teaching materials and media

Projector; 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: October 2025

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

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

Workload

Contact time		Self-study	
Lectures	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 horizon[1]
- understand the importance of getting information beyond their specialisation[2]
- be able to implement alternative ways and approaches to problem solving[3]
- be able to compare contents and learning outcomes of other study courses with their own achievements[4]

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

Teaching and learning methods

Depending on chosen module

Entrance requirements

Depending on chosen module

Reading list

Depending on chosen module

Examination

Graded exam acc. §§ 14 and 17–19 General Examination Regulations for Bachelor's and Master's Degree Programmes

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: November 2019

BR 2 5025 Lecture Series Biological Resources

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

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; Nele Vahrenholt, M.Sc.

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.

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 resources[2]
- know methods and analytical tools used in contemporary research on biological resources[2]
- 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]

[1]Knowledge; [2]Comprehension; [3]Application; [4]Analysis; [5]Synthesis 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

Certificate according to §§ 14 and 20 General Examination Regulations for Bachelor's and Master's Degree Programmes

The ECTS will be credited during semester 3.

Teaching materials and media

Projector; 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: October 2025

BR 3 5081 Master Thesis

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

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 fulfill the requirements of a scientific publication

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

Teaching and learning methods

Entrance requirements

Minimum of 50 ECTS

Reading list

Depending on chosen subject/task

Examination

Graded exam acc. § 26 General Examination Regulations for Bachelor's and Master's Degree Programmes and § 6 Examination Regulations for study programme: 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: November 2019

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 analyze 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 acc. § 27 General Examination Regulations for Bachelor’s and Master’s Degree Programmes

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: November 2019