Modulhandbuch

Course Book

M.Sc. Agricultural and Food Economics (AFECO)

Studienbeginn ab WS 2025/2026

Beginning of studies from WS 2025/2026

UNIVERSITÄT BONN

RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITÄT BONN

AGRAR-, ERNÄHRUNGS- UND INGENIEURWISSENSCHAFTLICHE FAKULTÄT

Modul-Übersicht/ Directory of modules

Abkürzungen/Abbreviations:

Häufigkeit/Course cycle

SS=Sommersemester/Summer semester

WS=Wintersemester/Winter semester

Verwendbarkeit des Moduls/Study program allocation

P/C=Pflichtmodul/Compulsory

WP/E=Wahlpflichtmodul/Elective

fWP/O=freies Wahlpflichtmodul/Optional

PM=Projektmodul/Project module

Lehr- und Lernformen/Teaching and learning methodes

V/L=Vorlesung/Lecture

Ü/T=Übung/Tutorial

S=Seminar

P=Praktikum/Practical training

E=Exkursion/Excursion

prÜ/pT=praktische Übung/ Practical course

PS=Projektseminar/Project seminar

T/sT=Tutorium/Student tutorial

K/C=Kolloquium/Colloquium

AG/SG=Arbeitsgemeinschaft/Study group

B-Arb/BT=Bachelorarbeit/Bachelorthesis

M-Arb/MT=Masterarbeit/Masterthesis

Mit Asterisk (*) gekennzeichnet: Lehrveranstaltungen, für die gemäß § 13 Abs. 6 der POO als Voraussetzung für die Teilnahme an Modulprüfungen die verpflichtende Teilnahme festgelegt ist. Die Pflicht zur Teilnahme besteht dann zusätzlich zu etwaigen sonstigen aufgeführten Studienleistungen.

Marked with an asterisk (*): Courses for which, in accordance with § 13 Paragraph 6 of the POO, compulsory attendance is specified as a prerequisite for taking module examinations. The compulsory attendance then exists in addition to any other listed academic achievements.

Compulsory modules

30 ECTS-CP must be completed.

Module Title: Methods of Empirical Research

Module ID/Code: BAS-110 [780761110]

1. Content and intended learning outcomes

Learning content:	Quantitative Research Introduction into R; inference and hypothesis testing; linear regression analysis (OLS) and Gauss Markov theorem; use of non-metric (dummy) variables; logistic regression Qualitative Research Research in Social Science; philosophy of science; key aspects of qualitative research; methods of qualitative research (observation, interview, focus groups); application of qualitative research including analysis

Learning outcomes

After a successful completion of the Quantitative Research Part of the course, the students…

- comprehend the theoretical basics of linear regression and logistics regression.
- can prepare data for analysis and perform empirical research using OLS.
- are able to generate and test hypotheses (t-test, F-test and Anova) and to interpret p-values.
- are able to interpret statistical software outputs.

After a successful completion of the Qualitative Research Part of the course, the students…

- can explain major epistemological approaches in social science, different ways of scientific reasoning and the basic assumptions of critical rationalism and the positivism dispute.
- are able to describe the key aspects and quality criteria in qualitative research and how it differentiates from quantitative research.
- can summarize different methods of qualitative research.
- are able to design a qualitative study, collect and analyse the data and interpret the results.
- are able to present and discuss own study results and reflect on those of others.

2. Prerequisites

obligatory	
recommended	Introductory course in methods of empirical research
Maximum number of students	60 students

3. Study program allocation

Study program	**Compulsory/ Elective**	**Semester**
M.Sc. Agricultural and Food Economics	C	1.

4. Teaching and learning methodes

Type of course	**Interval**	**Topic**	**Language of instruction**	**Group size**	**SWS**	**Workload [h]**	
						Contact time	**Self-study**
L	during the semester	Quantitative Methods	English	60	1,0	15,0	25,0
T*	during the semester	Quantitative Methods: Exercises with R	English	30	1,0	15,0	35,0
L	during the semester	Qualitative Methods	English	60	2,0	30,0	60,0

5. Course cycle	**6. Workload [h]**	**7. Duration**	**8. Credits (ECTS)**
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Written exam [780761119]		graded	English	50%
Project Work [780761118]	Presentations and reports	graded	English	50%

Academic Achievements

Module Title: Methods of Empirical Research
Module ID/Code: BAS-110 [780761110]
10. Module coordination
Module coordinator
Prof. Dr. Monika Hartmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Excursion in Agricultural and Food Economics

Module ID/Code: BAS-120 [780761120]

1. Content and intended learning outcomes

Learning content:	Visits to farms, to enterprises along the food chain, to institutions relevant to agricultural and food economics and policy; Preparation of presentations about and background information to contemporary problems and settings, future challenges and sustainability. Discussion of topics related to the research programs of the ILR, and the faculty.

Learning outcomes

After a successful completion of the course, the students…
- are able to identify main issues that are sector-relevant.
- are able to present sector-relevant information in a condensed manner.
- have the ability to discuss sector-relevant future challenges.
- can link information of different perspectives and teaching modules to explain real situations in agriculture, in the food chain and in rural areas, to discuss future challenges.
- are able to transfer knowledge into practice.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	1.+2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
E* (blocked)	full-day block	Excursions, lasting 1 to 5 days to domestic and international destinations	English	40	3,0	48,0	62,0
S*	during the semester	Excursion background block seminar	English	60	1,0	20,0	50,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS+SS	180	2	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
none		not graded		

Academic Achievements

- In total participation in and proof of five days of excursion throughout the study program, including participation in one of the long excursions (3-5 days)
- One active pre-excursion presentation
- Active participation in discussions on the excursion and pre-excursion presentations

10. Module coordination

Module coordinator

Dr. Nicolas Gerber

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Microeconomics

Module ID/Code: BAS-130 [780761130]

1. Content and intended learning outcomes

Learning content:	Choice and demand: utility maximization, expenditure minimization, Slutsky equation market demand, welfare measures Product supply and factor demand: production functions, cost minimization, profit maximization Coordination of supply and demand through - competitive markets for products and primary factors - Strategic interaction (game theory), common pool recources, imperfect competition

Learning outcomes

After a successful completion of the course, the students…
- are able to explain the basic theory of supply, demand and markets at a formal mathematical level.
- are able to formulate and solve unconstrained and constrained optimization problems and apply optimization tools to solve quantitative economic problems.
- analyse the description of economic decision problems and choose and apply the appropriate quantitative analytical framework.
- apply mathematical and numerical techniques to analyze and quantitatively model economic decision problems.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L		Microeconomics	English	120	3,0	45,0	60,0
T		Microeconomics	English	50	1,0	15,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780761139]		graded	English	50%
Assignment [780761138]		graded	English	50%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Sustainable Business Practices

Module ID/Code: BAS-140 [780761140]

1. Content and intended learning outcomes

Learning content:	Participants gain an overview of theoretical concepts and frameworks, approaches and methods in management that are state of the art both in research and managerial practice. They will review these approaches in the light of future challenges of our society, particularly in the context of sustainability, and discuss ways for improvement. These theory concepts are also applied and discussed to case studies drawn from leading international business schools (e.g. Harvard Business School).

Learning outcomes

After a successful completion of the course, the students are able to…
- Distinguish important theoretical approaches in management
- Relate different theoretical approaches and views and recognize differences and similarities between them
- Evaluate current management approaches in the context of sustainability
- Extract relevant information from scientific literature and relate practical industrial cases to theory
- Illustrate the areas of application of different theories and give examples
- Identify management problems, find possible solutions and formulate an action strategy
- Illustrate case studies and relate management theories to real-world examples
- Select and apply the most appropriate strategic tools for practical management cases

2. Prerequisites

obligatory	
recommended	
Maximum number of students	50 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester		English	50	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Presentation [780761149]		graded	English	50%
Assignment [780761148]		graded	English	50%

Academic Achievements

Module Title: Sustainable Business Practices
Module ID/Code: BAS-140 [780761140]
10. Module coordination
Module coordinator
Prof. Dr. David Antons
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information
Harvard cases (Harvard Business School) need to be bought, approx 5 € / case

Module Title: Decision-making and Risk Management in Agriculture

Module ID/Code: BAS-150 [780761150]

1. Content and intended learning outcomes

Learning content:	Different concepts of decision-making in the agricultural sector, including: investment decisions and criteria, risk measures and risk management; risk management instruments in the agricultural and food sector; theoretical concepts addressing risk in decision making; accompanying exercises and case studies

Learning outcomes

After a successful completion of the course, the students…
will be able to name and quantify important bases for decision-making for key players in the agricultural sector. They can name, critically discuss, apply to case studies and compare different theories and criteria for decisions, as well as develop and discuss resulting recommendations for action and strategies

2. Prerequisites

obligatory	
recommended	Methods of Empirical Research (BAS-110)
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L		Decision-making in Agriculture Lecture	English	50	2,0	28,0	44,0
T		Decision-making in Agriculture Practical	English	50	2,0	28,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min] [780761157]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Niklas Möhring

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Major or Minor Transformation and Innovation in the Agricultural Sector (ABS)

Requirements for the Major Specification:
- Modules accounting for a minimum of 30 ECTS-CP in the Major Specification
- Either one of the Modules ABS-210 or ABS-230
- The Research Seminar is in the Major Specification
- The Master Thesis is in the Major Specification

Requirements for the Minor Specification:
- Modules accounting to a minimum of 18 ECTS-CP in the Minor Specification

Every module can only be accounted once i.e. either for the Major or Minor Specification.

Module Title: Financial Accounting

Module ID/Code: ABS-100 [780762100]

1. Content and intended learning outcomes

Learning content:	Students learn about the annual financial statements as required by German commercial law (HGB) and as proposed by the Agricultural Ministry for farms. A deeper insight into Accounting is offered. Students will understand the balance sheet and the financial statement of a firm, being able to analyse it for rentability, solvency and stability of a firm.

Learning outcomes

After a successful completion of the course, the students…
- are able to solve accounting tasks.
- assign the legal frame to accounting.
- analyse annual financial statements.
- identify key figures (financial ratios) from financial statements.
- rate the economic situation of firms.

2. Prerequisites

obligatory	
recommended	Bachelor course in Financial Accounting like Ökonomie II offered in Bonn
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.
M.Ed. Agricultural Science (Teacher's Training)	E	2.
M.Ed. Agricultural Science (Teacher's Training)	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Financial Accounting	German	15	2,0	28,0	62,0
T	during the semester	Accounting and analyzing financial statements	German	15	2,0	28,0	62,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min] [780762107]	Presentation	graded	German	

Academic Achievements

10. Module coordination

Module coordinator

Dr. Hermann Trenkel

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Methods in Innovation Management

Module ID/Code: ABS-120 [780762120]

1. Content and intended learning outcomes

Learning content:	This course provides an introduction to various methods employed in innovation management research and practice. The course is set up to both introduce and facilitate the application of these methods for a range of relevant units of analysis: products, processes, services, business, or even the broader development of technology innovation systems, for example in the setting of agribusiness. Where applicable, students will also become acquainted with relevant softwares and databases, all with the goal of being able to use these methods for conducting their own studies. This course is especially recommended for students interested in working later in new product, service, or business development.

Learning outcomes

After a successful completion of the course, the students…
- Apply innovation management methods, particularly in the context of design thinking and business model development
- Compare and differentiate between different types of methods independently
- Implement research methods to obtain accurate and informative results
- Analyze (qualitative or quantitative) data and discuss important results of their research
- Evaluate and justify their choice of research methods to answer research questions
- Conduct studies independently, from formulating their research questions to discussing the results

2. Prerequisites

obligatory	
recommended	
Maximum number of students	25 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S	during the semester	Applied Planning Methods in Agribusiness	English	25	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780762129]		graded	English	50%
Presentation [780762128]		graded	English	50%

Academic Achievements

Module Title: Methods in Innovation Management
Module ID/Code: ABS-120 [780762120]
10. Module coordination
Module coordinator
Dr. Ekaterina Korneeva
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: The Economics of Agricultural Transformation

Module ID/Code: ABS-130 [780762130]

1. Content and intended learning outcomes

Learning content:	Transformations of agricultural production systems – past developments and future challenges towards sustainability; Economic and interdisciplinary concepts, theories and quantitative methods for analysing production system transformation in Agriculture; Application to case studies; Developing recommendations for sustainable transformations for stakeholders

Learning outcomes

After successfully completing the module, students will be able to name important past changes and future challenges for transforming agricultural production systems. They can name important theories and quantitative methods and apply them to case studies and data in order to identify decisive factors and barriers for change. They develop and critically discuss resulting recommendations for actors in the agricultural sector, such as farmers, industry and policymakers.

2. Prerequisites

obligatory	
recommended	BAS-150, BAS-110
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.
M.Ed. Agricultural Science (Teacher's Training)	E	3.
M.Ed. Nutrition Science and Home Economics (Teacher's Training)	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	The Economics of Agricultural Transformation Lecture	English	40	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780762129]		graded	English	70%
Presentation [780762128]		graded	English	30%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Niklas Möhring

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Agricultural Production Economics

Module ID/Code: ABS-210 [780762210]

1. Content and intended learning outcomes

Learning content:	Fundamentals of agricultural production economics; theoretical and quantitative production analysis; challenges related to agricultural production; farm production organization, embedding relevant insights from Agricultural Sciences and Economics ; recommendations to key actors in the sector

Learning outcomes

After a successful completion of the course, the students can name theoretical concepts and quantitative methods of production economics. They can discuss them critically using insights from Agricultural Sciences and Economics and apply them to relevant issues in agricultural production. They can interpret results with regard to recommendations for relevant actors.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Theory	English	30	2,0	28,0	42,0
T	during the semester	Application	English	30	2,0	28,0	82,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min] [780762219]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Niklas Möhring

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Strategic Technology and Innovation Management

Module ID/Code: ABS-230 [780762230]

1. Content and intended learning outcomes

Learning content:	The main focus of this course relates to the ability of organizations to innovate, including the tools, frameworks, processes, strategies, and structures that are relevant. Thus, this course will provide a detailed overview of strategic technology and innovation management approaches and tools; explore how these help to support and design the management of innovative projects and organizations; assist in the creation of an innovation-oriented and innovation-supporting environment; and facilitate the development and evaluation of appropriate strategies for the implementation of new product and technology development processes.

Learning outcomes

After a successful completion of the course, the students are able to…
- interpret, explain and summarize relevant topics and phases of management and development of new products.
- characterize and classify different forms and types of innovations.
- differentiate types of technology and innovation strategies
- understand and evaluate the challenges and opportunities of open innovation
- summarize the different options for structuring innovation processes
- name sources of innovative ideas and know methods for generating these ideas
- understand and evaluate business models

2. Prerequisites

obligatory	BAS-140
recommended	
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Strategic Technology and Innovation Management in Agribusiness	English	20	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report [780762239]	Project Report	graded	English	50%
Presentation [780762238]		graded	English	50%

Academic Achievements

Module Title: Strategic Technology and Innovation Management
Module ID/Code: ABS-230 [780762230]
10. Module coordination
Module coordinator
Prof. Dr. David Antons
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Seminar Economics of Sustainable Agricultural Production Systems

Module ID/Code: ABS-300 [780762360]

1. Content and intended learning outcomes

Learning content:	Introduction to important challenges for the sustainability and resilience of agricultural production systems, critical discussion of literature in groups, discussion of relevant literature, as well as the general structure of research in the field, methods and data, application to a small research project under guidance of supervisors

Learning outcomes

After a successful completion of the course, the students…
will be able to identify important challenges for the sustainability and resilience of agricultural production systems. Further, they will be able to recognize and critically discuss the content and structure of important scientific literature in the field and develop, evaluate and implement research concepts to answer a specific research question using appropriate quantitative methods.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	12 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S	during the semester		English	12	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report [780762369]		graded	English	70%
Presentation [780762128]		graded	English	30%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Niklas Möhring

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Seminar in Technology and Innovation Management and Entrepreneurship

Module ID/Code: ABS-310 [780762310]

1. Content and intended learning outcomes

Learning content:	Participants learn how to conduct an own research project related to the specific topics focused on technology and innovation management as well as entrepreneurship. They learn how to present their research, lead and moderate discussions. They learn how to select an appropriate theoretical framework on the specific research topic and how to deliver a consistent report on it.

Learning outcomes

After a successful completion of the course, the students are able to…
- Identify important scientific literature and relate it to a specific topic
- Work on a topic independently and collect any necessary data
- If relevant to your their topic, evaluate the collected data appropriately and present the results accordingly
- Understand and classify different findings from the scientific literature
- Collect and organize scientific content to make an original contribution in the form of both a presentation and a term paper
- Lead and moderate a discussion on current topics
- Write a scientific review

2. Prerequisites

obligatory	BAS-140
recommended	
Maximum number of students	15 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S	during the semester		English	15	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Presentation [780761149]		graded	English	50%
Report [780762319]		graded	English	50%

Academic Achievements

10. Module coordination

Module coordinator

Dr. Ekaterina Korneeva

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Special Project in Technology and Innovation Management

Module ID/Code: ABS-320 [780762320]

1. Content and intended learning outcomes

Learning content:	Students learn how to conduct and run own research projects in line with a topic from the field of "Technology and Innovation Management". Specific topic and form of deliverable (paper, report, poster, documentation,...) to be agreed upon between student and coordinator.

Learning outcomes

After a successful completion of the course, the students are able to…
• Gain knowledge of selected technology and innovation management issues.
• Improve their understanding of management and strategic concepts.
• Acquire knowledge of literature and data analysis.
• Apply theories, tools and methods from the field of technology and innovation management to the current social and economic debate.

2. Prerequisites

obligatory	30 ECTS-CP and a CGPA of 1,7 or better
recommended	
Maximum number of students	3 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
PS	during the semester	Special project	English	3	2,0	30,0	150,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Project work [780762329]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. David Antons

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Special Project in Production Economics

Module ID/Code: ABS-340 [780762340]

1. Content and intended learning outcomes

Learning content:	Special research-oriented project work for early stage research projects mutually agreed upon between student and coordinator. Topics are from the field of production economics, where interdisciplinary research topics are encouraged. Form of deliverable (paper, report, poster, documentation,…) to be agreed upon between student and coordinator in the beginning of the semester.

Learning outcomes

After a successful completion of the course, the students can…
- define a research question.
- work independently.
- develop an analytical framework.
- deal with feedback from supervisors.
- discuss results, identify shortcomings of the approach used and suggest possible solutions.

2. Prerequisites

obligatory	30 ECTS-CP and a CGPA of 1,7 or better
recommended	
Maximum number of students	3 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
PS	during the semester		English	3	2,0	30,0	150,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Project work [780762349]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Niklas Möhring

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Specific form of report (paper, data and technical documentation) to be agreed upon between student and coordinator within the first two weeks.

Module Title: Bio-Economic Modelling At Farm-Scale

Module ID/Code: ENV-240 [780764240]

1. Content and intended learning outcomes

Learning content:

1. Introduction: Why do we need simulation models? What are farm-scale simulation models?
2. Introduction to Linear Programming
2.1 Assumptions of Linear Programming
2.2 Primal and dual solution
3. Introduction to GAMS
3.1 Language structure
3.2 A first simple GAMS model of a farm
4. Modelling core bio-economic interactions at farm scale
4.1 Herd dynamics, requirements and cost minimal feed mix
4.2 Crops, rotations, cropping intensity
4.3 Labour use
4.4 Combing the elements, integrating environment indicators
5. Modeling Investments and Financing Decisions
5.1 Maximizing Net Present Value
5.2 Accounting for depreciation
5.3 Indivisibilities in investments
5.4 Full financial plan and income tax
6. Modeling Risk and risk behavior
6.1 State of nature, decision under uncertainty, MOTAD and Target MOTAD
6.2 State contingent decision variables
6.3 Dynamic stochastic programming

Learning outcomes

After a successful completion of the course, the students…
- will be able to outline the building blocks of farm-scale bio-economic models and describe the interactions inside and between various sub-systems of a farm as expressed in a formal optimization model.
- will be able to write simple or change existing code of more complex farm-scale bio-economic models in the software package GAMS.
- will be able to analyze the outcome of such a model against the background of micro-economic theory.
- will be able to evaluate the impact of drivers of farm management decisions such as changes in input/output prices or farm-scale policies on economic and environmental indicators based on the application of a bio-economic model.
- will be able to synthetize these impacts in a short report.

2. Prerequisites

obligatory	
recommended	A microeconomics course at master level such as BAS-130 and a course on risk management such as BAS-150. Both courses are obligatory in the AFECO program.
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Bio-Economic Modelling At Farm-Scale	English	20	2,0	28,0	62,0
T	during the semester	Bio-Economic Modelling At Farm-Scale	English	20	2.0	28.0	62,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

Module Title: Bio-Economic Modelling At Farm-Scale				
Module ID/Code: ENV-240 [780764240]				
9. Requirements for the rewarding of credits (ECTS)				
Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Term paper [780764249]		graded	English	
Academic Achievements				
10. Module coordination				
Module coordinator				
PD Dr. Wolfgang Britz				
Teaching person				
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/				
Institute/ Department				
Agrar-, Forst- und Ernährungswissenschaften				
11. Further information				
Students will receive a course license for GAMS. All material including the software code, slides used for teaching are made available via E-Campus. The term paper has to be handed in 8 weeks after semester end.				

Module Title: Food Marketing

Module ID/Code: MAC-100 [780765100]

1. Content and intended learning outcomes

Learning content:	Perception and processing of information (communication theories and models) Marketing concept with specific focus on food enterprises: - Impact of marketing (attitude, attitude and behaviour change, conditioning, external influences) - Marketing mix (product, price, distribution and promotion) - Advertising and commercials in the food sector (Advertising research) - Labelling policies - Role of the competitive environment (e.g. concentration, competition, buyer power) - Neuromarketing Marketing management: - Application of marketing strategies (e.g. brand portfolio strategy, segmentation policy) in a competitive environment using an interactive simulation game - Analysis and evaluation of market information based on research studies to develop marketing strategies

Learning outcomes

After a successful completion of the course, the students…
- can describe key concepts and models of communication and give examples.
- can explain psychological and sociological constructs relevant to marketing.
- understand marketing fields of action and their application in competitive food markets
- can explain differences in the impact of marketing strategies depending on the market environment.
- are able to develop, present, and defend marketing strategies at firm level in a highly competitive environment based on market research studies within a simulation game.

2. Prerequisites

obligatory	
recommended	Knowledge about the food sector
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Marketing	English	20	2,0	30,0	50,0
T	during the semester	Marktstrat Simulation Game	English	20	2,0	30,0	70,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780765109]		graded	English	60%
Presentation [780765108]		graded	English	40%

Academic Achievements

10. Module coordination

Module Title: Food Marketing
Module ID/Code: MAC-100 [780765100]
Module coordinator
Dr. Jeanette Klink-Lehmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Food security and sustainable food systems

Module ID/Code: APO-260 [780763260]

1. Content and intended learning outcomes

Learning content:	Students will learn to look at agriculture and nutrition through a food systems lens and understand synergies and tradeoffs between human health and environmental health goals. Concepts and measurement of food security, dietary quality, and the triple burden of malnutrition, as well as related policy interventions, will be discussed. Links between agriculture, biodiversity, climate change, diets, nutrition, and health will be analyzed from a global perspective and with empirical examples from low-, middle-, and high-income countries. Case studies will be used to evaluate specific food systems topics from a comprehensive sustainable development perspective. Case studies will include topics such as organic farming, GMOs, meat consumption, palm oil, nutrition-sensitive agriculture, and the supermarket revolution, among others.

Learning outcomes

After a successful completion of the course, the students…
- are able to define key terms related to food security and sustainable diets.
- can explain how food systems relate to the various sustainable development goals (SDGs).
- can identify policy needs and analyze the sustainability implications of specific interventions.
- can evaluate the arguments in the public debate around sustainable agriculture and nutrition.
- can construct and use dietary surveys and nutrition assessment tools.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1. or 3.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	E	1.
M.Sc. Nutrition Science	E	3.
M.Sc. Molecular Food Technology	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester		English	120	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780763269]		graded	English	100%

Academic Achievements

Module Title: Food security and sustainable food systems
Module ID/Code: APO-260 [780763260]
10. Module coordination
Module coordinator
Prof. Dr. Matin Qaim
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Probabilistic Programming for Applied Agricultural Economics

Module ID/Code: APO-320 [780763320]

1. Content and intended learning outcomes

Learning content:	Students learn to apply Bayesian Probabilistic Programming to answer quantitative causal research questions. Probabilistic Programming is a novel data science tool combining Bayesian Statistical Modelling, elements of Machine Learning, and standard econometrics. The course contributes to the master's degree by deepening student's quantitative skills and extending their methodical toolkit. Students will learn a basic workflow to perform theory-guided, applied statistical analysis of questions relevant to policy and business. The workflow is intensively practiced with guided coding examples and exercises (in Python). Along the way, the course covers the basics of Bayesian modeling and how to interpret Bayesian modeling results. The course contributes to student's skills relevant to data analytic jobs in research or the private sector.

Learning outcomes

After a successful completion of the course, the students…
- are able to interpret Bayesian modeling results.
- are able to compute statistics of interest from Bayesian model results.
- are able to apply Probabilistic Programming for their own empirical application (e.g. the Master Thesis or following data science projects).
- are able to explain and evaluate the benefits of (Bayesian) Probabilistic Programming approaches compared to other commonly applied econometric approaches.
- have obtained (python) coding experience and data science skills beneficial for the future academic or private sector job market.

2. Prerequisites

obligatory	none
recommended	One of either APO-230 or ENV-130
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Theory	English	20	2,0	30,0	60,0
pT	during the semester	Application	English	20	2,0	30,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763329]		graded	English	

Academic Achievements

Module Title: Probabilistic Programming for Applied Agricultural Economics
Module ID/Code: APO-320 [780763320]
10. Module coordination
Module coordinator
Dr. Hugo Storm
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information
Guided coding examples and exercises will be provided in Python, but no previous Python experience is required. It is sufficient that students have gained some previous experience in coding in general, for example by completing either APO-230 or ENV-130 (both using R) successfully. Nevertheless, a strong interest and motivation to learn Python basics is expected. Background Links: - Ghahramani, Zoubin. 2015. “Probabilistic Machine Learning and Artificial Intelligence.” Nature 521 (7553): 452–59. - McElreath, Richard. 2020. Statistical Rethinking: A Bayesian Course with Examples in R and Stan. Chapman and Hall/CRC. - Thomas Heckelei, Hugo Storm, Kathy Baylis. 2023. Probabilistic Programming for Embedding Theory and Quantifying Uncertainty in Econometric Analysis. Keynote, XVII EAAE Congress 2023 Rennes. https://github.com/hstorm/pp_eaae_rennes - NumPyro Documentation: https://num.pyro.ai/en/stable/

Module Title: Satellite Data in Agricultural Economics

Module ID/Code: ENV-320 [780764320]

1. Content and intended learning outcomes

Learning content:	Introduction and Overview, a primer on satellite data, opportunities arising from satellite data, what can be measured with satellite data, pitfalls, impact evaluations using satellite data, final discussion and conclusion.

Learning outcomes

After a successful completion of the course, the students…
- are able to work with satellite data in Google Earth Engine and in R.
- understand potentials and pitfalls of satellite data in agricultural, environmental, and resource economics.
- have a working knowledge of how to answer economic questions with geospatial data.

2. Prerequisites

obligatory	none
recommended	Statistics, Econometrics, Impact Evaluation, GIS, R, Foundations of Agricultural, Environmental, and Resource Economics, Google Earth Engine, Python
Maximum number of students	16 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Lecture Satellite Data	English	16	1,5	23,0	47,0
T	during the semester	Lecture Satellite Data	English	16	0,5	8,0	12,0
L	during the semester	Lecture Analysis and Modelling	English	16	1,5	23,0	47,0
T	during the semester	Lecture Analysis and Modelling	English	16	0,5	8,0	12,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min] [780764329]		graded	English	100%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. David Wüpper

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Data Wrangling, Visualization and GIS Data Analysis with R

Module ID/Code: ENV-270 [780764270]

1. Content and intended learning outcomes

Learning content:	Students will learn how to effectively prepare and visualize data and research results in different ways. Different types of data visualization in particular different kinds of plotting methods will be shown and applied in exercises. Particular emphasis will be given to spatial data and GIS analyses. Students will learn about the basics of GIS and spatial data projections, different spatial data types including raster and vector data, how to import and visualize them and how to combine them in spatial analyses. They will specifically learn how to work with spatial data in R and how to use this free and open source tool to visualize their results in publication ready maps. Students will apply the methods to visualize data of their own choice and present their results during the course.

Learning outcomes

After a successful completion of the course, the students…
- understand the peculiarities of different data formats and how to work with them.
- understand the basics of GIS.
- are able to work with different data in R.
- are able to visualize different data in R.
- conduct spatial analyses with data of different formats.
- are able to apply the packages and methods learned to their own case studies.
- are able to conduct their own analyses and to visualize publication-ready maps.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	25 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Data Wrangling, Visualization and GIS Data Analysis with R	English	25	2,0	30,0	60,0
T	during the semester	Solving Exercises Together	English	25	2,0	30,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report [780764279]		graded	English	50%
Presentation [780764278]	Submission of all reports	graded	English	50%

Academic Achievements

Module Title: Data Wrangling, Visualization and GIS Data Analysis with R
Module ID/Code: ENV-270 [780764270]
10. Module coordination
Module coordinator
Jun.-Prof. Dr. Lisa Biber-Freudenberger
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Research Seminar Transformation and Innovation in the Agricultural Sector

Module ID/Code: ABS-330 [780762330]

1. Content and intended learning outcomes

Learning content:	Literature reviews, preparation of a research concept and a thesis proposal; scientific presentations and discussions of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- can describe the problem background of a chosen topic after conducting a literature review.
- can infer a research question or a testable hypothesis from a problem statement.
- can assess, select and compare state-of-the-art research articles in the relevant field.
- have determined an approproate methodology relevant for the research question(s).
- have developed the concept of their Master thesis, including work plan and expected outcomes.

2. Prerequisites

obligatory	48 ECTS-CP
recommended	ABS-120 Methods in Management Research
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for ABS	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Class discussions, presentations, feedback sessions	English	30	2,0	60,0	20,0
S*	during the semester	Own research, writing a term paper	English	30	0,0	0,0	100,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report (presentation) [780762339]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Dr. Daniel Hermann

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Writing guidelines and info leaflet about the Master thesis process can be found under: https://www.afeco.uni-bonn.de/while-studying

Module Title: Research Seminar in Innovation Management and Entrepreneurship

Module ID/Code: ABS-335

1. Content and intended learning outcomes

Learning content:	Literature reviews, preparation of a research concept and a thesis proposal; scientific presentations and discussions of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- can describe the problem background of a chosen topic after conducting a literature review.
- can infer a research question or a testable hypothesis from a problem statement.
- can assess, select and compare state-of-the-art research articles in the relevant field.
- have determined an approproate methodology relevant for the research question(s).
- have developed the concept of their Master thesis, including work plan and expected outcomes.

2. Prerequisites

obligatory	48 ECTS-CP
recommended	ABS-120 Methods in Management Research
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for ABS	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Class discussions, presentations, feedback sessions	English	30	2,0	60,0	20,0
S*	during the semester	Own research, writing a term paper	English	30	0,0	0,0	100,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780762378]	Regular participation to learn from others	graded	English	60%
Presentation [780762379]	Regular participation to learn from others	graded	English	40%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. David Antons

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Writing guidelines and info leaflet about the Master thesis process can be found under: https://www.afeco.uni-bonn.de/while-studying

Major or Minor Agricultural and Development Policy (APO)

Requirements for the Major Specification:
- Modules accounting for a minimum of 30 ECTS-CP in the Major Specification
- The Module APO-120
- The Research Seminar is in the Major Specification
- The Master Thesis is in the Major Specification

Requirements for the Minor Specification:
- Modules accounting to a minimum of 18 ECTS-CP in the Minor Specification

Every module can only be accounted once i.e. either for the Major or Minor Specification.

Module Title: European and International Agricultural Policy

Module ID/Code: APO-110 [780763110]

1. Content and intended learning outcomes

Learning content:	1) Theoretical Background for evaluating agricultural policies 2) Economic analysis of agricultural policies of important global players and selected developing countries 3) Current topics and future challenges in international agricultural policy

Learning outcomes

After a successful completion of the course, the students…
- will be able to describe the agricultural policy profiles of important global players.
- will be able to critically discuss the outcomes of current studies in view of assumptions made.
- will be able to apply economic theory in analysing agricultural policies.
- will be able to select and apply relevant economic theories to real-world policy issues.

2. Prerequisites

obligatory	
recommended	Module BAS-130 "Microeconomics"
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1./3.
M.Ed. Agricultural Science (Teacher's Training)	E	1./3.
M.Ed. Agricultural Science (Teacher's Training)	E	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	European and International Agricultural Policy	English	120	3,0	45,0	40,0
T	during the semester	European and International Agricultural Policy	English	30	1,0	15,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763119]		graded	English	50%
Oral exam [15 min] [780763118]		graded	English	50%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Applied Trade Theory and Policy

Module ID/Code: APO-120 [780763120]

1. Content and intended learning outcomes

Learning content:

1. Classic and new economcis models of international trade
2. Gains and losses from trade – country and economic agent perspective
3. Trade and welfare impacts of domestic and trade policies.
4. Analysis of multilateral and regional trade agreements
5. The role of heterogeneous firms in trade

Learning outcomes

After a successful completion of the course, the students…
- are able to explain the principles of classical and new economic theories of international trade determining trade patterns between countries.
- are able to identify the limitations of the theories and apply them to predefined research problems in the field of agricultural and food trade.
- are able to assess the trade and welfare impacts of trade policies independently in the context of exercises.
- are able to assess contributions and limitations of academic literature on trade issue's.
- have learned to apply spreadsheets and formal analytics to solve economic trade problems.

2. Prerequisites

obligatory	
recommended	Module BAS-130|ARTS-AE6 or similar knowledge in microeconomics at master level
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Applied Trade Theory and Policy	English	120	3,0	45,0	40,0
T	during the semester	Solving theoretical and practical problems	English	20	1,0	15,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763129]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Current Research in Land Economics

Module ID/Code: APO-150

1. Content and intended learning outcomes

Learning content:	This course covers all the major aspects of publishing papers in agricultural economics and we will focus here on land economics specifically. We cover: Finding a good research question, getting the data, research design, writing a compelling paper, and communicating the research findings. All of this will be based on discussing recently published academic articles, focusing on all the above-mentioned aspects.

Learning outcomes

After a successful completion of the course, the students…
- Have developed a sense for how to find a good research question,
- What data is required and where to find it,
- How to pick a defensible research design,
- How to write a paper that people want to read,
- and how to communicate one's research findings to different audiences

2. Prerequisites

obligatory	
recommended	Impact Evaluation, Foundations of Agricultural, Environmental, and Resource Economics, Scientific Writing
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics	E	1./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S	during the semester	Seminar	English	20	4,0	62	118

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min]		graded	English	70 %
Oral presentation [10 min]		graded	English	30 %

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. David Wuepper

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Applied Modelling of Agricultural Systems

Module ID/Code: APO-220 [780763220]

1. Content and intended learning outcomes

Learning content:

In this course, the students jointly develop an or improve an existing partial or general equilibrium model and apply it to a topic chosen by them:

- Decision on the topic to analyze - the supervisor will propose topics based on contact to institutions such as World Bank, OECD, FAO or the EU Commission
- Decision on the appropriate type of simulation model (partial or general equilibrium, details on model structure) to apply
- Acquisition of the necessary data and parameters
- Coding of the model respectively the changes to an exisiting model
- Mapping of the policy question into an appropriate shock definition of the equilibrium model
- Performing and analyzing counterfactual runs
- Documentation of the model (online, report)
- Preparation of a presentation (ca. 30-45 minutes) and a report (ca. 50 page) for the client

Students will present and disucss their findings after the end of the term in a video-conference or a meeting with the client with whom they will also share their report. The students organize the work themselves (milestones and their timining, labour division in groups). The supervisor will monitor and support the process when needed, especially with regard to technical and methodological questions.

Learning outcomes

After a successful completion of the course, the students…
- will have successfully applied a policy relevant equilibrium model.
- will have analyzed a real-world policy question based on quantitative tools.
- will have evaluated the impact of changes in policies on quantities, prices and welfare based on the application on the chosen and expanded equilibrium model.
- will synthetize these impacts in a presentation for the client and jointly document and comment them in a larger report.

2. Prerequisites

obligatory	
recommended	A course on partial and general equilibrium model such as "Partial and General Equilibrium Modelling" APO-250 (offered in 2. term of AFECO program)
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
Proj	during the semester		English	20	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

Module Title: Applied Modelling of Agricultural Systems

Module ID/Code: APO-220 [780763220]

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report (presentation) [780763229]		graded	English	50%
Report [780763228]		graded	English	50%

Academic Achievements

10. Module coordination

Module coordinator

PD Dr. Wolfgang Britz

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Presentation for client will be schuled after end of term, report has to be handed in 8 weeks after end of term.

Students will receive a course license for GAMS. Examples of past clients and themes: FAO (Rome): analysis of climate change impacts on agri-food markets in developing countries; OECD (Paris): analysis of the impact of the US/China trade ware on selected agri-food markets; GIZ (Bonn): analysis of policy options to foster the self-sufficiency in Western African rice markets; World Bank (Washington D.C.): Analysis of climate change impacts on households in selected developing countries in the context of the Socio-Economic Pathway 2

Module Title: Advanced Applied Econometrics

Module ID/Code: APO-230 [780763230]

1. Content and intended learning outcomes

Learning content:	- Review of the General Linear Model, OLS and GLS practicing matrix algebra - Model specification (functional form and variable choice) - Endogenous regressors and approachesd to instrumental variable estimation, Generalised Method of Moments, identification strategies - Panel data analysis - Maximum Likelihood Estimation - Limited dependent variable models

Learning outcomes

After a successful completion of the course, the students…
- are able to correctly interpret econometric content from textbooks and articles.
- are able to apply matrix algebra in the context of statistics.
- select appropriate econometric methods based on the analysis of the data situation and research question.
- correctly use and interpret outputs from econometric software packages.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L		Advanced Applied Econometrics	English	120	3,0	45,0	40,0
T		Advanced Applied Econometrics	English	20	1,0	15,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763239]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

11. Further information

Module Title: Development Economics

Module ID/Code: APO-240 [780763240]

1. Content and intended learning outcomes

Learning content:	Empirical patterns in economic development, poverty analysis, economic growth models, causes of differential economic growth and development across countries, including the role of institutions, policies, climate change, and natural resource scarcities. Sustainable management of natural resources for development and poverty reduction: key theoretical concepts, critical discussion of empirical policy problems, policy evaluation.

Learning outcomes

After a successful completion of the course, the students…
- are able to describe economic growth models and the drivers of socio-economic development.
- can explain the role of institutions, labor markets, migration and sustainable natural resource management for economic development.
- are able to apply learned concepts for analysis of development polices.
- can analyse empirical examples through case studies.
- are able to generalize lessons learnt from case studies to broader development issues.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Development Economics	English	25	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780763249]		graded	English	100%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Matin Qaim

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Partial and General Equilibrium Modelling

Module ID/Code: APO-250 [780763250]

1. Content and intended learning outcomes

Learning content:

1. Introduction: Why do we need simulation models? What are simulation models acting at market scale?
2. Introduction to GAMS
- Language structure
- A single market model in GAMS
3. Multi-Commodity models (MCMs)
- A simple multi-market model in GAMS
- Introducing policy instruments in a MCM
- Armington approach and spatial arbitrage
- Presentation of MCMs such as the Policy Evaluation Model of the OECD, the AgriSpace model for Norway and CAPRI
4. Computable General Equilibrium models
- The structure of a Social Accounting Matrix
- Typical structure of a CGE (production function, final demand, trade representation)
- SAM calibration and calibrating a CGE against the SAM
- Trade in CGEs (Armington, CET, Melitz model)
- Scenario analysis with CGEBox

Learning outcomes

After a successful completion of the course, the students…
- will be able to outline the building blocks of partial and general equilibrium models and describe the interactions inside and between these building blocks as expressed in their equations.
- will be able to change code of existing equilibrium models in the software package GAMS and conduct counterfactual analysis.
- will be able to analyze the outcome of such models against the background of micro-economic theory and their knowledge of agri-food markets and more general of the economic system.
- will be able to evaluate the impact of changes in policies on quantities, prices and welfare based on the application of equilibrium models.
- will be able to synthetize these impacts in a short report.

2. Prerequisites

obligatory	
recommended	A microeconomics course at master level such as BAS 130. That course is obligatory in the AFECO program. A course on Global Food Markets and Systems (BAS 140) is helpful.
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Partial and General Equilibrium Modelling	English	20	2,0	28,0	62,0
T	during the semester	Partial and General Equilibrium Modelling	English	20	2,0	28,0	62,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

Module Title: Partial and General Equilibrium Modelling

Module ID/Code: APO-250 [780763250]

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780763259]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

PD Dr. Wolfgang Britz

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Students will receive a course license for GAMS. All material including the software code, slides used for teaching are made available via E-Campus. The term paper has to be handed in 8 weeks after semester end.

Module Title: Food security and sustainable food systems

Module ID/Code: APO-260 [780763260]

1. Content and intended learning outcomes

Learning content:	Students will learn to look at agriculture and nutrition through a food systems lens and understand synergies and tradeoffs between human health and environmental health goals. Concepts and measurement of food security, dietary quality, and the triple burden of malnutrition, as well as related policy interventions, will be discussed. Links between agriculture, biodiversity, climate change, diets, nutrition, and health will be analyzed from a global perspective and with empirical examples from low-, middle-, and high-income countries. Case studies will be used to evaluate specific food systems topics from a comprehensive sustainable development perspective. Case studies will include topics such as organic farming, GMOs, meat consumption, palm oil, nutrition-sensitive agriculture, and the supermarket revolution, among others.

Learning outcomes

After a successful completion of the course, the students…
- are able to define key terms related to food security and sustainable diets.
- can explain how food systems relate to the various sustainable development goals (SDGs).
- can identify policy needs and analyze the sustainability implications of specific interventions.
- can evaluate the arguments in the public debate around sustainable agriculture and nutrition.
- can construct and use dietary surveys and nutrition assessment tools.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1 or 3.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	E	1.
M.Sc. Nutrition Science	E	3.
M.Sc. Molecular Food Technology	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester		English	120	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780763269]		graded	English	100%

Academic Achievements

Module Title: Food security and sustainable food systems
Module ID/Code: APO-260 [780763260]
10. Module coordination
Module coordinator
Prof. Dr. Matin Qaim
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Seminar Policy Analysis

Module ID/Code: APO-300 [780763300]

1. Content and intended learning outcomes

Learning content:	Topical issues on agricultural policy at European and international level will be analysed in presentations and written term papers.

Learning outcomes

After a successful completion of the course, the students…
- can identify and apply the relevant theories and methods in the field of economic policy analysis to policy issues related to the agricultural and food sector.
- are able to correctly apply research techniques such as structuring research papers, literature search, referencing and technical writing.
- are able to present research results using appropriate techniques and can efficiently moderate a scientific discussion.
- are able to discuss research results and relate it to state-of-the-art academic literature and to derive policy implications.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S	during the semester	Policy Analysis	English	15	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780763309]		graded	English	67%
Presentation [780763308]		graded	English	33%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Special Project in Agricultural and Development Policy

Module ID/Code: APO-310 [780763310]

1. Content and intended learning outcomes

Learning content:	Research topics from the field of Agricultural and Development Policy. Specific topic and form of deliverable (paper, report, poster, documentation....) to be agreed upon between student and coordinator.

Learning outcomes

After a successful completion of the course, the students…
- are able select and apply theories and appropriate qualitative or quantitative tools of analysis to answer a specific policy related reseach question.
- have evaluated alternative options to analyse policies or evaluated alternative policies with respect to economic impacts.
- have synthesized academic literature and their own research work to contribute to a current policy debate and to identify still existing research gaps.

2. Prerequisites

obligatory	30 ECTS-CP and a CGPA of 1,7 or better
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
PS	during the semester	Special project	English	3	2,0	30,0	150,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Project work [780763319]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Probabilistic Programming for Applied Agricultural Economics

Module ID/Code: APO-320 [780763320]

1. Content and intended learning outcomes

Learning content:	Students learn to apply Bayesian Probabilistic Programming to answer quantitative causal research questions. Probabilistic Programming is a novel data science tool combining Bayesian Statistical Modelling, elements of Machine Learning, and standard econometrics. The course contributes to the master's degree by deepening student's quantitative skills and extending their methodical toolkit. Students will learn a basic workflow to perform theory-guided, applied statistical analysis of questions relevant to policy and business. The workflow is intensively practiced with guided coding examples and exercises (in Python). Along the way, the course covers the basics of Bayesian modeling and how to interpret Bayesian modeling results. The course contributes to student's skills relevant to data analytic jobs in research or the private sector.

Learning outcomes

After a successful completion of the course, the students…
- are able to interpret Bayesian modeling results.
- are able to compute statistics of interest from Bayesian model results.
- are able to apply Probabilistic Programming for their own empirical application (e.g. the Master Thesis or following data science projects).
- are able to explain and evaluate the benefits of (Bayesian) Probabilistic Programming approaches compared to other commonly applied econometric approaches.
- have obtained (python) coding experience and data science skills beneficial for the future academic or private sector job market.

2. Prerequisites

obligatory	none
recommended	One of either APO-230 or ENV-130
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Theory	English	20	2,0	30,0	60,0
pT	during the semester	Application	English	20	2,0	30,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763329]		graded	English	

Academic Achievements

Module Title: Probabilistic Programming for Applied Agricultural Economics
Module ID/Code: APO-320 [780763320]
10. Module coordination
Module coordinator
Dr. Hugo Storm
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information
Guided coding examples and exercises will be provided in Python, but no previous Python experience is required. It is sufficient that students have gained some previous experience in coding in general, for example by completing either APO-230 or ENV-130 (both using R) successfully. Nevertheless, a strong interest and motivation to learn Python basics is expected. Background Links: - Ghahramani, Zoubin. 2015. “Probabilistic Machine Learning and Artificial Intelligence.” Nature 521 (7553): 452–59. - McElreath, Richard. 2020. Statistical Rethinking: A Bayesian Course with Examples in R and Stan. Chapman and Hall/CRC. - Thomas Heckelei, Hugo Storm, Kathy Baylis. 2023. Probabilistic Programming for Embedding Theory and Quantifying Uncertainty in Econometric Analysis. Keynote, XVII EAAE Congress 2023 Rennes. https://github.com/hstorm/pp_eaae_rennes - NumPyro Documentation: https://num.pyro.ai/en/stable/

Module Title: Satellite Data in Agricultural Economics

Module ID/Code: ENV-320 [780764320]

1. Content and intended learning outcomes

Learning content:	Introduction and Overview, a primer on satellite data, opportunities arising from satellite data, what can be measured with satellite data, pitfalls, impact evaluations using satellite data, final discussion and conclusion.

Learning outcomes

After a successful completion of the course, the students…
- are able to work with satellite data in Google Earth Engine and in R.
- understand potentials and pitfalls of satellite data in agricultural, environmental, and resource economics.
- have a working knowledge of how to answer economic questions with geospatial data.

2. Prerequisites

obligatory	none
recommended	Statistics, Econometrics, Impact Evaluation, GIS, R, Foundations of Agricultural, Environmental, and Resource Economics, Google Earth Engine, Python
Maximum number of students	16 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Lecture Satellite Data	English	16	1,5	23,0	47,0
T	during the semester	Lecture Satellite Data	English	16	0,5	8,0	12,0
L	during the semester	Lecture Analysis and Modelling	English	16	1,5	23,0	47,0
T	during the semester	Lecture Analysis and Modelling	English	16	0,5	8,0	12,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min] [780764329]		graded	English	100%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. David Wüpper

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

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Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Research Seminar in Agricultural and Development Policy

Module ID/Code: APO-330 [780763330]

1. Content and intended learning outcomes

Learning content:	Literature studies, preparation of a research concept and a proposal, presentations of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- can describe the problem background of a chosen topic after conducting a literature review.
- can infer a research question or a testable hypothesis from a problem statement.
- can assess, select and compare state-of-the-art research articles in the relevant field.
- have determined an appropriate methodology relevant for the research question(s) after evaluation of alternative approaches.
- have developed the concept of their Master thesis, including work plan and expected outcomes.

2. Prerequisites

obligatory	48 ECTS-CP
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for APO	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Class discussions, presentations, feedback sessions	English	15	2,0	30,0	30,0
S*	during the semester	Own research, writing term paper	English	15	0,0	0,0	120,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780763339]	Regular participation to learn from others	graded	English	67%
Presentation [780763338]	Regular participation to learn from others	graded	English	33%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

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Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Major or Minor Resource and Environmental Economics (ENV)

Requirements for the Major Specification:
- Modules accounting for a minimum of 30 ECTS-CP in the Major Specification
- The Module ENV-100
- The Research Seminar is in the Major Specification
- The Master Thesis is in the Major Specification

Requirements for the Minor Specification:
- Modules accounting to a minimum of 18 ECTS-CP in the Minor Specification

Every module can only be accounted once i.e. either for the Major or Minor Specification.

Module Title: Sustainability Economics

Module ID/Code: ENV-100 [780764100]

1. Content and intended learning outcomes

Learning content:	Basic approaches of ecological and environmental economics; intertemporal allocation of renewable and non-renewable resources; concepts and indicators for sustainability; systemic linkages in complex systems; analysis of policies and governance for sustainability and transformative change;

Learning outcomes

After a successful completion of the course, the students…
- can apply alternative approaches in economic thinking to concepts of sustainability.
- can identify and analyse systemic relationships related to selected sustainability challenges
- can assess and critically discuss advantages and disadvantages of alternative policy options and governance arrangements

2. Prerequisites

obligatory	
recommended	Solid knowledge of microeconomics, institutional economics, and welfare theory. Methods of Empirical Research
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	economics on sustainability	English	20	2,0	30,0	40,0
T	during the semester	economics on sustainability	English	20	2,0	30,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [120 min] [780764109]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title:	**Impact evaluation of conservation and development projects and environmental policies**
Module ID/Code:	ENV-130 [780764130]

1. Content and intended learning outcomes

Learning content:	- Role of impact evaluation in guiding the design of development and environmental conservation initiatives - Understanding and developing a theory of change - Overview, hands-on application, and critical assessment of quantitative evaluation methods including experimental and quasi-experimental research designs - Evaluation case studies; advanced topics, such as impact heterogeneity and mediation analysis.

Learning outcomes

After a successful completion of the course, the students…
- know alternative quantitative evaluation methods and their underlying assumptions.
- understand how different types of biases affect evaluations of development and conservation initiatives.
- apply selected evaluation methods to real world problems.
- critically interpret findings from evaluation studies.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	25 students

3. Study program allocation

Study program	**Compulsory/ Elective**	**Semester**
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	**Interval**	**Topic**	**Language of instruction**	**Group size**	**SWS**	**Workload [h]**	
						Contact time	**Self-study**
L	during the semester	Impact Evaluation	English	25	2,0	30,0	60,0
T	during the semester	Exercise	English	25	2,0	30,0	60,0

5. Course cycle	**6. Workload [h]**	**7. Duration**	**8. Credits (ECTS)**
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Assignment [780764139]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Complex systems modeling of human-environment interactions

Module ID/Code: ENV-140 [780764140]

1. Content and intended learning outcomes

Learning content:	In this course, students will learn how to model human-environment interactions to understand essential concepts in sustainability science, such as feedback loops, tipping points, social-ecological resilience, regime transitions, decision-making under uncertainty, discounting the future, strategic interactions, collective action, bounded rationality, and learning. We will cover different modeling approaches, from dynamic systems and optimal equilibria to agent-based models. Students apply these in practical projects using the Python programming language - no previous knowledge of Python is required. By taking a complex systems science perspective, we will develop a unified approach to these topics.

Learning outcomes

After completing the course, students will be able to:
1. Explain and compare the underlying assumptions and comparative advantages of different modeling approaches to human-environment interactions.
2. Develop, modify, and analyze complex systems models of human-environment interactions.
3. Critically evaluate and communicate human-environment models and their results.

2. Prerequisites

obligatory	
recommended	basic knowledge in microeconomics (game theory), dynamical systems, and in a general-purpose programming language is an advantage
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Complex systems modeling of human-environment interactions	English	20	2,0	30,0	30,0
T	during the semester	Complex systems modeling of human-environment interactions	English	20	2,0	30,0	90,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Presentation [780764149]		graded	English	50%
Oral examination [780764148]		graded	English	50%

Academic Achievements

Module Title: Complex systems modeling of human-environment interactions
Module ID/Code: ENV-140 [780764140]
10. Module coordination
Module coordinator
Jun. Prof. Dr. Wolfram Barfuss
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Advanced Environmental Economics

Module ID/Code: ENV-210 [780764210]

1. Content and intended learning outcomes

Learning content:	Critical interpretation and discussion of theoretical models and applications in environmental and resource economics. Examples from forest and biodiversity conservation, pollution and waste, non-renewable resources, trans-boundary resource use, and international environmental agreements.

Learning outcomes

After a successful completion of the course, the students…
- critically discuss alternative theoretical approaches in environmental and resource economics.
- understand the implications of assumptions in formal economic models for real world applications.
- apply theory and numerical techniques to solve common problems in environmental and resource economics.

2. Prerequisites

obligatory	
recommended	Sustainability Economics
Maximum number of students	25 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Advanced Environmental Economics	English	25	2,0	30,0	0,0
T	during the semester	Assignment	English	25	2,0	30,0	120,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Oral exam [20 min] [780764219]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Bio-Economic Modelling At Farm-Scale

Module ID/Code: ENV-240 [780764240]

1. Content and intended learning outcomes

Learning content:

1. Introduction: Why do we need simulation models? What are farm-scale simulation models?
2. Introduction to Linear Programming
2.1 Assumptions of Linear Programming
2.2 Primal and dual solution
3. Introduction to GAMS
3.1 Language structure
3.2 A first simple GAMS model of a farm
4. Modelling core bio-economic interactions at farm scale
4.1 Herd dynamics, requirements and cost minimal feed mix
4.2 Crops, rotations, cropping intensity
4.3 Labour use
4.4 Combing the elements, integrating environment indicators
5. Modeling Investments and Financing Decisions
5.1 Maximizing Net Present Value
5.2 Accounting for depreciation
5.3 Indivisibilities in investments
5.4 Full financial plan and income tax
6. Modeling Risk and risk behavior
6.1 State of nature, decision under uncertainty, MOTAD and Target MOTAD
6.2 State contingent decision variables
6.3 Dynamic stochastic programming

Learning outcomes

After a successful completion of the course, the students…
- will be able to outline the building blocks of farm-scale bio-economic models and describe the interactions inside and between various sub-systems of a farm as expressed in a formal optimization model.
- will be able to write simple or change existing code of more complex farm-scale bio-economic models in the software package GAMS.
- will be able to analyze the outcome of such a model against the background of micro-economic theory.
- will be able to evaluate the impact of drivers of farm management decisions such as changes in input/output prices or farm-scale policies on economic and environmental indicators based on the application of a bio-economic model.
- will be able to synthetize these impacts in a short report.

2. Prerequisites

obligatory	
recommended	A microeconomics course at master level such as BAS-130 and a course on risk management such as BAS-150. Both courses are obligatory in the AFECO program.
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Bio-Economic Modelling At Farm-Scale	English	20	2,0	28,0	62,0
T	during the semester	Bio-Economic Modelling At Farm-Scale	English	20	2,0	28,0	62,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

Module Title: Bio-Economic Modelling At Farm-Scale				
Module ID/Code: ENV-240 [780764240]				
9. Requirements for the rewarding of credits (ECTS)				
Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Term paper [780764249]		graded	English	
Academic Achievements				
10. Module coordination				
Module coordinator				
PD Dr. Wolfgang Britz				
Teaching person				
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/				
Institute/ Department				
Agrar-, Forst- und Ernährungswissenschaften				
11. Further information				
Students will receive a course license for GAMS. All material including the software code, slides used for teaching are made available via E-Campus. The term paper has to be handed in 8 weeks after semester end.				

Module Title: Seminar on Environmental Economics and Policy

Module ID/Code: ENV-300 [780764300]

1. Content and intended learning outcomes

Learning content:	Topical and policy relevant issues in environmental and ecological economics. Examples: Policies for tropical forest conservation, sustainable green and bioeconomy, international trade and the environment.

Learning outcomes

After a successful completion of the course, the students…
- obtain deep knowledge of selected environmental policy issues.
- are able to interpret advanced concepts in environmental policy analysis.
- can apply environmental and ecological economic concepts to topical policy debates.
- are able to analyze quantitative and qualitative data using empirical methods from environmental economics.
- can synthesize complex debates on environmental policy design.

2. Prerequisites

obligatory	
recommended	Sustainability Economics
Maximum number of students	15 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S* (blocked)	full-day block	Seminar, Friday block in November	English	15	4,0	60,0	120,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780764309]	Regular participation	graded	English	50%
Presentation [780764308]	Regular participation	graded	English	50%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Special Project in Environmental Economics

Module ID/Code: ENV-310 [780764310]

1. Content and intended learning outcomes

Learning content:	Topic from the field of Environmental, Ecological or Resource Economics. Specific topic and form of deliverable (term paper, report, poster, documentation,...) to be agreed upon between student and coordinator.

Learning outcomes

After a successful completion of the course, the students…
- obtain deep knowledge of selected environmental policy issues.
- are able to interpret advanced environmental and ecological economic concepts.
- can apply environmental and ecological economic concepts to topical policy debates.
- can apply advanced skills in literature analysis and quantitative or qualitative methods.
- are able to synthesize complex debates on environmental policy design.

2. Prerequisites

obligatory	30 ECTS-CP and a CGPA of 1,7 or better
recommended	
Maximum number of students	3 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
PS	during the semester	Special project	English	3	2,0	20,0	160,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Project work [780764319]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Sustainability, Risk and Transformation	
Module ID/Code: ENV-260 [780764260]	
1. Content and intended learning outcomes	
Learning content:	Knowledge about sustainability, risk(s) and transformation is key to understanding the societal challenges of global change and to considering them in one's own field of action. In this course, we take an interdisciplinary approach to teaching these concepts integrating knowledge from social and natural theory and science. Starting from the current state of global sustainability problems and transformation perspectives as well as associated political processes, this interdisciplinary and multi-perspective course first illustrates the fundamentals of the terms 'sustainability', 'risk' and 'transformation' as well as other related concepts and terms. Building on this theoretical underpinning, particular attention is paid to the 2030 Agenda for Sustainable Development by critically discussing aspects such as implementation and measurement of the Sustainable Development Goals (SDGs) including the basics and critical aspects of economic growth. Furthermore, we explore how farmers, consumers and insurances take decisions in the face of increasing risks associated with global change as well as transformation. This is done by providing insights into the field of sustainable consumption, such as on types, motives and barriers of sustainable production and consumption, as well as on measures to promote sustainable consumer behaviour. We furthermore explore how natural ecosystems manage risks and if and how these principles could be also applied in an agricultural context e.g. in the context of pest management. Furthermore, we introduce complex systems thinking as a tool to deal with risks. The examples used during the course often refer to agriculture and the food industry, but are intentionally not limited to them. Besides the continuous use of built-in short exercises, interactive teaching formats (e.g. live quizzes, case studies, simulation game), students will be engaged in lively discussions on the topics and encouraged to bring in own perspectives. As a basis for the grading, students will engage in group work to develop and implement either a board game or a small self-experiment (will be decided each year) incorporating aspects of risks, sustainability or transformation. The results of this group work will be presented during a public game or poster presentation.
Learning outcomes	
After a successful completion of the course, the students … • know about the different scientific and political debates as well as their development in the context of sustainability, risks and transformation • have developed a general and interdisciplinary understanding of complex challenges and concepts related to sustainability, risks and transformation • understand the practical challenges and chances related to these concepts for agriculture in different contexts (different countries, different farm sizes etc.) • are able to apply these concepts in the context of research questions related to agriculture and land use	
2. Prerequisites	
obligatory	
recommended	
Maximum number of students	50

Module Title: Sustainability, Risk and Transformation

Module ID/Code: ENV-260 [780764260]

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	C	3.
M.Sc. Crop Science	E Focus PERC	3.

4. Teaching and learning methods

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	weekly		English	50	4,0	41,0	139,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Presentation of Game or Experiment		yes	English	

Academic Achievements

10. Module coordination

Module coordinator

Jun-Prof. Dr. Lisa Biber-Freudenberger

Teaching person

Jun-Prof. Dr. Lisa Biber-Freudenberger, Prof. Dr. Zita Sebesvari, Jun-Prof. Dr. Daniel Herrmann, Prof. Dr. Niklas Möhring, Dr. Schulte-Filthaus, Jun-Prof. Dr Wolfram Barfuss, Jun-Prof.Dr. Dominic Lemken, Jun-Prof. Janina Dierks

11. Further information

External guests e.g. farmers to talk about their perspectives on sustainability, risks and transformation

Module Title: Advanced Applied Econometrics

Module ID/Code: APO-230 [780763230]

1. Content and intended learning outcomes

Learning content:	- Review of the General Linear Model, OLS and GLS practicing matrix algebra - Model specification (functional form and variable choice) - Endogenous regressors and approachesd to instrumental variable estimation, Generalised Method of Moments, identification strategies - Panel data analysis - Maximum Likelihood Estimation - Limited dependent variable models

Learning outcomes

After a successful completion of the course, the students…
- are able to correctly interpret econometric content from textbooks and articles.
- are able to apply matrix algebra in the context of statistics.
- select appropriate econometric methods based on the analysis of the data situation and research question.
- correctly use and interpret outputs from econometric software packages.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L		Advanced Applied Econometrics	English	120	3,0	45,0	40,0
T		Advanced Applied Econometrics	English	20	1,0	15,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763239]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

11. Further information

Module Title: Agricultural Production Economics

Module ID/Code: ABS-210 [780762210]

1. Content and intended learning outcomes

Learning content:	Fundamentals of agricultural production economics; theoretical and quantitative production analysis; challenges related to agricultural production; farm production organization, embedding relevant insights from Agricultural Sciences and Economics ; recommendations to key actors in the sector

Learning outcomes

After a successful completion of the course, the students…
can name theoretical concepts and quantitative methods of production economics, discuss them critically using insights from Agricultural Sciences and Economics and apply them to relevant issues in agricultural production. They can interpret results with regard to recommendations for relevant actors.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Theory	English	30	2,0	28,0	42,0
T	during the semester	Application	English	30	2,0	28,0	82,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min] [780762219]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Niklas Möhring

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Ethics in Food Consumption and Production

Module ID/Code: MAC-230 [780765230]

1. Content and intended learning outcomes

Learning content:

- Introduction to ethics: ethical theories, ethical arguments
- Application of ethical reasoning to food topics (e. g., global hunger, food biotechnology, livestock welfare/animal rights).
- Ethics and consumer choice: determinants of (non-)ethical consumption (behavioural consumer models); influencing consumer choice (e.g. food labelling policies; nudges).
- Ethics and businesses (in the food sector): Role of businesses in society, Corporate Social Responsibility (CSR) related concepts, effects of CSR (empirical evidence), CSR communication.
- Case studies regarding ethical consumerism and CSR in the food sector.

Learning outcomes

After a successful completion of the course, the students are able…

- to describe ethical theories and concepts and apply those to the agricultural and food sector.
- to explain and reflect on different concepts regarding the role of businesses in society.
- to summarise insights from empirical studies investigating responsible firm conduct.
- can summarize and critically reflect on behavioural theories used to explain ethical/sustainable behavior.
- can critically assess ethical cases with relevance to the agricultural and food sector.
- are able to conduct their own evaluation of a specific case linked to the food sector.
- are able to discuss and reflect on own findings and on research of others.
- have developed skills in producing a scientific presentation.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1./3.
M.Ed. Agricultural Science (Teacher's Training)	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Ethics in Food Consumption and Production	English	20	2,4	36,0	50,0
T*	during the semester	Discussion of ethical issues related to (food) consumption and production	English	20	0,8	12,0	20,0
PS*	during the semester	Case studies regarding ethics in the food sector.	English	20	0,8	12,0	50,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Project work [780765239]	Regular participation (see below)	graded	English	60%
Assignment [780765238]	Regular participation (see below)	graded	English	40%

Academic Achievements

Module Title: Ethics in Food Consumption and Production
Module ID/Code: MAC-230 [780765230]
10. Module coordination
Module coordinator
Prof. Dr. Monika Hartmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information
Regular participation is required to learn from others and enable others to learn

Module Title: Partial and General Equilibrium Modelling

Module ID/Code: APO-250 [780763250]

1. Content and intended learning outcomes

Learning content:

1. Introduction: Why do we need simulation models? What are simulation models acting at market scale?
2. Introduction to GAMS
- Language structure
- A single market model in GAMS
3. Multi-Commodity models (MCMs)
- A simple multi-market model in GAMS
- Introducing policy instruments in a MCM
- Armington approach and spatial arbitrage
- Presentation of MCMs such as the Policy Evaluation Model of the OECD, the AgriSpace model for Norway and CAPRI
4. Computable General Equilibrium models
- The structure of a Social Accounting Matrix
- Typical structure of a CGE (production function, final demand, trade representation)
- SAM calibration and calibrating a CGE against the SAM
- Trade in CGEs (Armington, CET, Melitz model)
- Scenario analysis with CGEBox

Learning outcomes

After a successful completion of the course, the students…
- will be able to outline the building blocks of partial and general equilibrium models and describe the interactions inside and between these building blocks as expressed in their equations.
- will be able to change code of existing equilibrium models in the software package GAMS and conduct counterfactual analysis.
- will be able to analyze the outcome of such models against the background of micro-economic theory and their knowledge of agri-food markets and more general of the economic system.
- will be able to evaluate the impact of changes in policies on quantities, prices and welfare based on the application of equilibrium models.
- will be able to synthetize these impacts in a short report.

2. Prerequisites

obligatory	
recommended	A microeconomics course at master level such as BAS 130. That course is obligatory in the AFECO program. A course on Global Food Markets and Systems (BAS 140) is helpful.
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Partial and General Equilibrium Modelling	English	20	4,0	28,0	62,0
T	during the semester	Partial and General Equilibrium Modelling	English	20	4,0	28,0	62,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

Module Title: Partial and General Equilibrium Modelling				
Module ID/Code: APO-250 [780763250]				
9. Requirements for the rewarding of credits (ECTS)				
Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Term paper [780763259]		graded	English	
Academic Achievements				
10. Module coordination				
Module coordinator				
PD Dr. Wolfgang Britz				
Teaching person				
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/				
Institute/ Department				
Agrar-, Forst- und Ernährungswissenschaften				
11. Further information				
Students will receive a course license for GAMS. All material including the software code, slides used for teaching are made available via E-Campus. The term paper has to be handed in 8 weeks after semester end.				

Module Title: Food security and sustainable food systems

Module ID/Code: APO-260 [780763260]

1. Content and intended learning outcomes

Learning content:	Students will learn to look at agriculture and nutrition through a food systems lens and understand synergies and tradeoffs between human health and environmental health goals. Concepts and measurement of food security, dietary quality, and the triple burden of malnutrition, as well as related policy interventions, will be discussed. Links between agriculture, biodiversity, climate change, diets, nutrition, and health will be analyzed from a global perspective and with empirical examples from low-, middle-, and high-income countries. Case studies will be used to evaluate specific food systems topics from a comprehensive sustainable development perspective. Case studies will include topics such as organic farming, GMOs, meat consumption, palm oil, nutrition-sensitive agriculture, and the supermarket revolution, among others.

Learning outcomes

After a successful completion of the course, the students…
- are able to define key terms related to food security and sustainable diets.
- can explain how food systems relate to the various sustainable development goals (SDGs).
- can identify policy needs and analyze the sustainability implications of specific interventions.
- can evaluate the arguments in the public debate around sustainable agriculture and nutrition.
- can construct and use dietary surveys and nutrition assessment tools.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1 or 3.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	E	1.
M.Sc. Nutrition Science	E	3.
M.Sc. Molecular Food Technology	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester		English	120	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780763269]		graded	English	100%

Academic Achievements

Module Title: Food security and sustainable food systems
Module ID/Code: APO-260 [780763260]
10. Module coordination
Module coordinator
Prof. Dr. Matin Qaim
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Probabilistic Programming for Applied Agricultural Economics

Module ID/Code: APO-320 [780763320]

1. Content and intended learning outcomes

Learning content:	Students learn to apply Bayesian Probabilistic Programming to answer quantitative causal research questions. Probabilistic Programming is a novel data science tool combining Bayesian Statistical Modelling, elements of Machine Learning, and standard econometrics. The course contributes to the master's degree by deepening student's quantitative skills and extending their methodical toolkit. Students will learn a basic workflow to perform theory-guided, applied statistical analysis of questions relevant to policy and business. The workflow is intensively practiced with guided coding examples and exercises (in Python). Along the way, the course covers the basics of Bayesian modeling and how to interpret Bayesian modeling results. The course contributes to student's skills relevant to data analytic jobs in research or the private sector.

Learning outcomes

After a successful completion of the course, the students…
- are able to interpret Bayesian modeling results.
- are able to compute statistics of interest from Bayesian model results.
- are able to apply Probabilistic Programming for their own empirical application (e.g. the Master Thesis or following data science projects).
- are able to explain and evaluate the benefits of (Bayesian) Probabilistic Programming approaches compared to other commonly applied econometric approaches.
- have obtained (python) coding experience and data science skills beneficial for the future academic or private sector job market.

2. Prerequisites

obligatory	none
recommended	One of either APO-230 or ENV-130
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Theory	English	20	2,0	30,0	60,0
pT	during the semester	Application	English	20	2,0	30,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763329]		graded	English	

Academic Achievements

Module Title: Probabilistic Programming for Applied Agricultural Economics
Module ID/Code: APO-320 [780763320]
10. Module coordination
Module coordinator
Dr. Hugo Storm
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information
Guided coding examples and exercises will be provided in Python, but no previous Python experience is required. It is sufficient that students have gained some previous experience in coding in general, for example by completing either APO-230 or ENV-130 (both using R) successfully. Nevertheless, a strong interest and motivation to learn Python basics is expected. Background Links: - Ghahramani, Zoubin. 2015. “Probabilistic Machine Learning and Artificial Intelligence.” Nature 521 (7553): 452–59. - McElreath, Richard. 2020. Statistical Rethinking: A Bayesian Course with Examples in R and Stan. Chapman and Hall/CRC. - Thomas Heckelei, Hugo Storm, Kathy Baylis. 2023. Probabilistic Programming for Embedding Theory and Quantifying Uncertainty in Econometric Analysis. Keynote, XVII EAAE Congress 2023 Rennes. https://github.com/hstorm/pp_eaae_rennes - NumPyro Documentation: https://num.pyro.ai/en/stable/

Module Title: Satellite Data in Agricultural Economics

Module ID/Code: ENV-320 [780764320]

1. Content and intended learning outcomes

Learning content:	Introduction and Overview, a primer on satellite data, opportunities arising from satellite data, what can be measured with satellite data, pitfalls, impact evaluations using satellite data, final discussion and conclusion.

Learning outcomes

After a successful completion of the course, the students…
- are able to work with satellite data in Google Earth Engine and in R.
- understand potentials and pitfalls of satellite data in agricultural, environmental, and resource economics.
- have a working knowledge of how to answer economic questions with geospatial data.

2. Prerequisites

obligatory	none
recommended	Statistics, Econometrics, Impact Evaluation, GIS, R, Foundations of Agricultural, Environmental, and Resource Economics, Google Earth Engine, Python
Maximum number of students	16 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Lecture Satellite Data	English	16	1,5	23,0	47,0
T	during the semester	Lecture Satellite Data	English	16	0,5	8,0	12,0
L	during the semester	Lecture Analysis and Modelling	English	16	1,5	23,0	47,0
T	during the semester	Lecture Analysis and Modelling	English	16	0,5	8,0	12,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [90 min] [780764329]		graded	English	100%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. David Wüpper

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Data Wrangling, Visualization and GIS Data Analysis with R

Module ID/Code: ENV-270 [780764270]

1. Content and intended learning outcomes

Learning content:	Students will learn how to effectively prepare and visualize data and research results in different ways. Different types of data visualization in particular different kinds of plotting methods will be shown and applied in exercises. Particular emphasis will be given to spatial data and GIS analyses. Students will learn about the basics of GIS and spatial data projections, different spatial data types including raster and vector data, how to import and visualize them and how to combine them in spatial analyses. They will specifically learn how to work with spatial data in R and how to use this free and open source tool to visualize their results in publication ready maps. Students will apply the methods to visualize data of their own choice and present their results during the course.

Learning outcomes

After a successful completion of the course, the students…
- understand the peculiarities of different data formats and how to work with them.
- understand the basics of GIS.
- are able to work with different data in R.
- are able to visualize different data in R.
- conduct spatial analyses with data of different formats.
- are able to apply the packages and methods learned to their own case studies.
- are able to conduct their own analyses and to visualize publication-ready maps.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	25 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Data Wrangling, Visualization and GIS Data Analysis with R	English	25	2,0	30,0	60,0
T	during the semester	Solving Exercises Together	English	25	2,0	30,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report [780764279]		graded	English	50%
Presentation [780764278]	Submission of all reports	graded	English	50%

Academic Achievements

Module Title: Data Wrangling, Visualization and GIS Data Analysis with R
Module ID/Code: ENV-270 [780764270]
10. Module coordination
Module coordinator
Jun.-Prof. Dr. Lisa Biber-Freudenberger
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Research Seminar in Resource and Environmental Economics

Module ID/Code: ENV-330 [780764330]

1. Content and intended learning outcomes

Learning content:	Literature studies, preparation of a research concept and a proposal; presentations of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- synthesize the scientific state of the art in a self-selected field of research.
- construct a conceptual framework in social science / environmental economics.
- develop and present a research proposal.
- engage in scientific debates.

2. Prerequisites

obligatory	48 ECTS-CP
recommended	Sustainability Economics
Maximum number of students	15 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for ENV	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Class discussions, presentations, feedback sessions	English	15	2,0	30,0	30,0
S*	during the semester	Own research, writing term paper	English	15	0,0	0,0	120,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780764339]	Regular participation to learn from others and enable others to learn	graded	English	60%
Presentation [780764338]	Regular participation to learn from others and enable others to learn	graded	English	40%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Major or Minor Market and Consumer Research (MAC)

Requirements for the Major Specification:
- Modules accounting for a minimum of 30 ECTS-CP in the Major Specification
- Two out of the three Modules MAC-100, MAC-110 or MAC-130
- The Research Seminar is in the Major Specification
- The Master Thesis is in the Major Specification

Requirements for the Minor Specification:
- Modules accounting to a minimum of 18 ECTS-CP in the Minor Specification

Every module can only be accounted once i.e. either for the Major or Minor Specification.

Module Title: Global Agricultural and Food Markets

Module ID/Code: MAC-130 [780765130]

1. Content and intended learning outcomes

Learning content:	- Supply, demand, trade of major food markets (European/global) - Interdependencies between agricultural and food markets - Legal framework for international markets - Private versus public standards in agricultural and food markets - Relevance and evaluation of Non-Tariff Trade Barriers in agricultural and food markets - Relevant actors on agricultural and food markets - Spatial and enterprise concentration in the agricultural up- and downstream sector - Basics of modelling agricultural markets

Learning outcomes

After a successful completion of the course, the students…
- can describe key European and global agricultural and food markets.
- can explain the impact of interdependencies between agricultural and food markets.
- are able to analyse developments on agricultural and food markets based on economic theories.
- can describe the basic framework for international trade provided by the WTO.
- can explain the relevance, the international framework of NTB in agricultural and food markets.
- are able to evaluate the welfare effects of NTB under different assumptions.
- comprehend the difference between private and public standards in world agricultural and food markets.
- can explain and structure relevant actors of international agricultural and food markets.
- can explain the need for coordination within food value chains depending on product and value chain characteristics.
- can evaluate results of agricultural models.
- are able to combine insights generated in class to a specific case and present/ discuss in class.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	25 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Knowledge wrt and tools to analyse Global Food Market and Systems	English	25	2,0	30,0	45,0
S	during the semester	Combine insights generated in class to a specific case	English	25	1,0	15,0	45,0
T	during the semester	Analyse/evaluate intervention and situation in markets	English	25	1,0	15,0	30,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780765139]		graded	English	60%
Presentation [780765138]		graded	English	40%

Module Title: Global Agricultural and Food Markets				
Module ID/Code: MAC-130 [780765130]				
Academic Achievements				
10. Module coordination				
Module coordinator				
Dr. Johannes Simons				
Teaching person				
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/				
Institute/ Department				
Agrar-, Forst- und Ernährungswissenschaften				
11. Further information				

Module Title: Food Marketing

Module ID/Code: MAC-100 [780765100]

1. Content and intended learning outcomes

Learning content:	Perception and processing of information (communication theories and models) Marketing concept with specific focus on food enterprises: - Impact of marketing (attitude, attitude and behaviour change, conditioning, external influences) - Marketing mix (product, price, distribution and promotion) - Advertising and commercials in the food sector (Advertising research) - Labelling policies - Role of the competitive environment (e.g. concentration, competition, buyer power) - Neuromarketing Marketing management: - Application of marketing strategies (e.g. brand portfolio strategy, segmentation policy) in a competitive environment using an interactive simulation game - Analysis and evaluation of market information based on research studies to develop marketing strategies

Learning outcomes

After a successful completion of the course, the students…
- can describe key concepts and models of communication and give examples.
- can explain psychological and sociological constructs relevant to marketing.
- understand marketing fields of action and their application in competitive food markets
- can explain differences in the impact of marketing strategies depending on the market environment.
- are able to develop, present, and defend marketing strategies at firm level in a highly competitive environment based on market research studies within a simulation game.

2. Prerequisites

obligatory	
recommended	Knowledge about the food sector
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Marketing	English	20	2,0	30,0	50,0
T	during the semester	Marktstrat Simulation Game	English	20	2,0	30,0	70,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780765109]		graded	English	60%
Presentation [780765108]		graded	English	40%

Academic Achievements

10. Module coordination

Module Title: Food Marketing
Module ID/Code: MAC-100 [780765100]
Module coordinator
Dr. Jeanette Klink-Lehmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Food Industrial Economics

Module ID/Code: MAC-110 [780765110]

1. Content and intended learning outcomes

Learning content:

The module provides students with an understanding of the interrelationship between industry structure, firms' behavior and performance and the rationale of government intervention in imperfect competitive markets. It covers topics related to

- Structure and characteristics of the European food sector
- Competition (competition concepts, competition policy in Europe)
- Structure Conduct Performance framework;
- Market structure (barriers to entry/exit; monopoly/monopsony power, dominant firm, oligopoly)
- Business conduct (cooperative and non-cooperative strategies, price discrimination, product differentiation and monopolistic competition, advertisement, information policy)..
- Market performance (level and persistence).
- Real-world cases dealing with competition relevant issues and focusing on food markets.

Learning outcomes

After a successful completion of the course, the students are able…

- to describe main characteristics of the European food sector.
- to explain the interdependencies between market structure, conduct and performance.
- to apply concepts used in industrial economics.
- to analyse interactions between firms using game theory.
- to analyse the impacts of different market structures on producer, consumer and societal welfare.
- to analyse the effects of business strategies on firms' performance and consumer and societal welfare.
- to explain and give examples for the role of economic policy in imperfect competitive markets.
- to relate presented theories to real world cases with relevance to the food sector, analyze and evaluate those cases, discuss policy implications.

2. Prerequisites

obligatory	
recommended	BAS-130 or equivalent knowledge
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Food Industrial Economics	English	20	2,5	30,0	50,0
T	during the semester	Exercise: Solving problems in Industrial Economics	English	20	1,0	15,0	20,0
PS	during the semester	Case studies of IE with relevance for the food sector.	English	20	0,5	8,0	57,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780765119]	written and/or oral assessments (non-graded)	graded	English	70%
Project work [780765118]		graded	English	30%

Academic Achievements

Module Title: Food Industrial Economics
Module ID/Code: MAC-110 [780765110]
10. Module coordination
Module coordinator
Prof. Dr. Monika Hartmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Behavioral Economics in Agri-Food markets

Module ID/Code: MAC-120 [780765120]

1. Content and intended learning outcomes

Learning content:	Rational choice in neoclassical economics, bounded rationality, information economics (e.g. asymmetric information, signaling, screening), framing, anchoring and endowment effects, status quo and negatvity bias, heuristics and cognitive errors, nudging, libertarian paternalism, experimental economics, altruism, fairness and reciprocity, introduction to cognitive neuroscience.

Learning outcomes

After a successful completion of the course, the students…
- can outline the concept of rational choice in neoclassical economics and it's shortcomings in explaining real world human behaviour.
- can explain key concepts in behavioral economics like bounded rationality, framing, anchoring and endowment effects, status quo and negativity bias, heuristics and cognitive errors, nudging, altruism, fairness and reciprocity.
- can describe how experiments are conducted in behavioral economics and construct an experimental setup for a given research question.
- understand ethical considerations in behavioral economics, focusing in particular on nudging and libertarian paternalism.
- understand different methods of cognitive neuroscience.
- can comprehend, present and discuss experimental scientific papers.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Behavioral Economics	English	20	3,0	45,0	60,0
S	during the semester	Behavioral Economics	English	20	1,0	15,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [60 min] [780765129]		graded	English	70%
Presentation [780765128]		graded	English	30%

Academic Achievements

Module Title: Behavioral Economics in Agri-Food markets
Module ID/Code: MAC-120 [780765120]
10. Module coordination
Module coordinator
Dr. Jeanette Klink-Lehmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Advanced Methods of Market and Consumer Research

Module ID/Code: MAC-210 [780765210]

1. Content and intended learning outcomes

Learning content:	The module provides insights into theories and methods concerning the measurement and analysis of consumers' attitudes, perceptions, evaluations, and preferences using non-parametric tests, moderation/mediation analysis, regression models, factor analysis, structural equation modelling, cluster analysis, and (discrete) choice experiments.

Learning outcomes

After a successful completion of the course, the students…
- are able to prepare data for a subsequent statistical analysis.
- are able to perform hypothesis testing using parametric and non-parametric tests.
- are able to perform empirical research applying the method(s) taught in class.
- are able to evaluate the analytic results obtained from the statistical software.
- are able to identify appropriate research methods for a research problem.
- are able to understand respective methods from a theoretical point of view.
- are able to present and reflect results obtained from empirical analysis.

2. Prerequisites

obligatory	
recommended	Module BAS-110
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Theories and methods of empirical research	English	20	2,0	30,0	70,0
T	during the semester	Conduct empirical research	English	20	2,0	30,0	50,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780765219]		graded	English	60%
Project work [780765218]		graded	English	40%

Academic Achievements

10. Module coordination

Module coordinator

Dr. Jeanette Klink-Lehmann

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Ethics in Food Consumption and Production

Module ID/Code: MAC-230 [780765230]

1. Content and intended learning outcomes

Learning content:

- Introduction to ethics: ethical theories, ethical arguments
- Application of ethical reasoning to food topics (e. g., global hunger, food biotechnology, livestock welfare/animal rights).
- Ethics and consumer choice: determinants of (non-)ethical consumption (behavioural consumer models); influencing consumer choice (e.g. food labelling policies; nudges).
- Ethics and businesses (in the food sector): Role of businesses in society, Corporate Social Responsibility (CSR) related concepts, effects of CSR (empirical evidence), CSR communication.
- Case studies regarding ethical consumerism and CSR in the food sector.

Learning outcomes

After a successful completion of the course, the students are able…

- to describe ethical theories and concepts and apply those to the agricultural and food sector.
- to explain and reflect on different concepts regarding the role of businesses in society.
- to summarize insights from empirical studies investigating responsible firm conduct.
- can summarize and critically reflect on behavioural theories used to explain ethical/sustainable behavior.
- can critically assess ethical cases with relevance to the agricultural and food sector.
- are able to conduct their own evaluation of a specific case linked to the food sector.
- are able to discuss and reflect on own findings and on research of others.
- have developed skills in producing a scientific presentation.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1./3.
M.Ed. Agricultural Science (Teacher's Training)	E	1.
M.Ed. Agricultural Science (Teacher's Training)	E	1.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Ethics in Food Consumption and Production	English	20	2,4	36,0	50,0
T	during the semester	Discussion of ethical issues related to (food) consumption and production	English	20	0,8	12,0	20,0
PS	during the semester	Case studies regarding ethics in the food sector.	English	20	0,8	12,0	50,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Project work [780765239]	75% class attendance	graded	English	60%
Assignment [780765238]		graded	English	40%

Academic Achievements

Module Title: Ethics in Food Consumption and Production
Module ID/Code: MAC-230 [780765230]
10. Module coordination
Module coordinator
Prof. Dr. Monika Hartmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Seminar Markets and Consumers

Module ID/Code: MAC-300 [780765300]

1. Content and intended learning outcomes

Learning content:	In depth insights into a topical issue linked to agricultural and food markets, food marketing or consumer behavior. Knowledge with respect to research techniques (e.g. literature search, project conceptualisation, gathering and analysing data), paper writing (structuring research papers, technical writing guidelines) and presentation and discussion of own results as well as moderation of discussions.

Learning outcomes

After a successful completion of the course, the students…

- recall relevant results of the current state of research regarding the selected topic.
- are able to identify, explain and apply theories and methods from the fields of microeconomics, industrial economics, marketing and/ or behavioral economics relevant to the selected topic.
- are able to derive testable hypotheses or research questions from relevant theoretical models and from a review of the relevant literature.
- acquired expertise in gathering primary data or identifying suitable secondary data and in analysing the data.
- are able to discuss and reflect on own findings and on research of others.
- are able to write a scientific paper, create a scientific presentation and present the research.
- are able to moderate a session.

2. Prerequisites

obligatory	
recommended	BAS-110; MAC-210 or APO-220
Maximum number of students	12 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S	during the semester	Marketing and Market Analysis	English	12	4,0	60,0	120,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780765309]	Regular participation	graded	English	70%
Presentation [780765308]	Regular participation	graded	English	30%

Academic Achievements

Module Title: Seminar Markets and Consumers
Module ID/Code: MAC-300 [780765300]
10. Module coordination
Module coordinator
Prof. Dr. Monika Hartmann
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Special Project in Market and Consumer Research

Module ID/Code: MAC-310 [780765310]

1. Content and intended learning outcomes

Learning content:	Topic from the field of Market and Consumer Research. On the topic and form of deliverable(s) (e.g. term paper, poster) student and coordinator of the module have to agree.

Learning outcomes

After a successful completion of the course, the students can…

- independently acquire in-depth knowledge of a research topic in the field of market and consumer research.
- identify relevant theories and methods and select and apply suitable data analysis methods.
- critically evaluate their own research results and reflect on them in the context of the current state of research.

2. Prerequisites

obligatory	30 ECTS-CP and a CGPA of 1,7 or better
recommended	
Maximum number of students	3 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2./3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
PS	during the semester		English	3	2,0	30,0	150,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Project work [780765319]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Monika Hartmann

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Advanced Applied Econometrics

Module ID/Code: APO-230 [780763230]

1. Content and intended learning outcomes

Learning content:	- Review of the General Linear Model, OLS and GLS practicing matrix algebra - Model specification (functional form and variable choice) - Endogenous regressors and approachesd to instrumental variable estimation, Generalised Method of Moments, identification strategies - Panel data analysis - Maximum Likelihood Estimation - Limited dependent variable models

Learning outcomes

After a successful completion of the course, the students…
- are able to correctly interpret econometric content from textbooks and articles.
- are able to apply matrix algebra in the context of statistics.
- select appropriate econometric methods based on the analysis of the data situation and research question.
- correctly use and interpret outputs from econometric software packages.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L		Advanced Applied Econometrics	English	120	3,0	45,0	40,0
T		Advanced Applied Econometrics	English	20	1,0	15,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763239]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

11. Further information

Module Title: Food security and sustainable food systems

Module ID/Code: APO-260 [780763260]

1. Content and intended learning outcomes

Learning content:	Students will learn to look at agriculture and nutrition through a food systems lens and understand synergies and tradeoffs between human health and environmental health goals. Concepts and measurement of food security, dietary quality, and the triple burden of malnutrition, as well as related policy interventions, will be discussed. Links between agriculture, biodiversity, climate change, diets, nutrition, and health will be analyzed from a global perspective and with empirical examples from low-, middle-, and high-income countries. Case studies will be used to evaluate specific food systems topics from a comprehensive sustainable development perspective. Case studies will include topics such as organic farming, GMOs, meat consumption, palm oil, nutrition-sensitive agriculture, and the supermarket revolution, among others.

Learning outcomes

After a successful completion of the course, the students…
- are able to define key terms related to food security and sustainable diets.
- can explain how food systems relate to the various sustainable development goals (SDGs).
- can identify policy needs and analyze the sustainability implications of specific interventions.
- can evaluate the arguments in the public debate around sustainable agriculture and nutrition.
- can construct and use dietary surveys and nutrition assessment tools.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1 or 3.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	E	1.
M.Sc. Nutrition Science	E	3.
M.Sc. Molecular Food Technology	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester		English	120	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780763269]		graded	English	100%

Academic Achievements

Module Title: Food security and sustainable food systems
Module ID/Code: APO-260 [780763260]
10. Module coordination
Module coordinator
Prof. Dr. Matin Qaim
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Module Title: Food, Health and Policy: A multidisciplinary Problem Based Learning perspective

Module ID/Code: MAC-320 [780765320]

1. Content and intended learning outcomes

Learning content:

Through Problem-based learning (PBL), this course aims to challenge students to develop critical thinking skills and a systems approach to policy-making problems. In a dynamic and creative environment, students will be required to apply nexus thinking to understand problematics, reflect on potential solutions, and create policy recommendations.

PBL is an active learning methodology that can enhance knowledge retention and increase motivation, among other benefits. By discussing the unique characteristics of the cases presented in class, students will not only gain an understanding of the underlying policy theories but will also be tasked with developing practical approaches to solving the problems that combine health and food debates.

Drawing on the concepts of Utopia/Dystopia, foodscapes/health scares, culture, and diet-related diseases, students will go beyond mere case analysis and generate innovative solutions with an open-minded approach

To facilitate this process, students will be organized into small subgroups for hands-on training and provided with limited introductory lectures. The majority of their learning experience will involve working in diverse groups and receiving guidance through tutoring sessions that support the development of their final written and oral group presentations.

Learning outcomes

After a successful completion of the course, the students…
- Develop this interrelated multidisciplinary critical thinking.
- Explain how food systems relate to health system.
- Understand and explain social, cultural, and technical relations between food systems, health, and policies.
- Approach the learning of food, health and policy with critical and creative methodologies to increase undersanding, keep complexity and improve science communication.
- Critically evaluate and synthesise food policies; interpret the problem definition, assumptions, and effects on the current food and health system, and comprehend the implications of specific interventions.
- Identify policies, generate arguments to develop recommendations that tackle challenges at the nexus of food, health, and society.
- Summarize and translate results of policy analysis with a sustainability approach in mind, with the objective to achieve effective science communication.

2. Prerequisites

obligatory	none
recommended	- Ernährungspolitik (BSc.) with Prof. Dr. Dominic Lemken - From AFECO MSc: MAC and APO track.
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	3.
M.Sc. Nutrition Science	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Dystopi,Food and health system,policy analysis	English	20	1,0	11,0	8,0
T*	during the semester	Case study, Nourishing frame	English	20	1,0	11,0	26,0
Proj* (blocked)	full-day block	Case study, Creative communication	English	0	0,0	0,0	34,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	90	1	3,0

Module Title: Food, Health and Policy: A multidisciplinary Problem Based Learning perspective				
Module ID/Code: MAC-320 [780765320]				
9. Requirements for the rewarding of credits (ECTS)				
Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Report [780765329]	Regular participation. At least 75% presence (Including Hybrid sessions)	graded	English	70%
Presentation [780765328]	Full participation	graded	English	30%
Academic Achievements				
10. Module coordination				
Module coordinator				
Prof. Dr. Dominic Lemken				
Teaching person				
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/				
Institute/ Department				
Agrar-, Forst- und Ernährungswissenschaften				
11. Further information				
We intend to take advantage of the hybrid approach that can be used in teaching. Therefore some lectures will be in person and some online.				

Module Title: Research Seminar in Market and Consumer Research

Module ID/Code: MAC-330 [780765330]

1. Content and intended learning outcomes

Learning content:	Literature studies, preparation of a research concept and a proposal, presentations of the state of the art in a thematic field of Market and Consumer Research; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- gained proficiency in synthesizing the state of the art in the field of their research project.
- are able to select and comprehend (an) appropriate theory/ies for their research project.
- know how to derive testable hypotheses or research questions from relevant theoretical models and from a review of the relevant literature.
- have decided for an appropriate methodology to be applied in their research project.
- are able to plan a research project.
- can moderate and conduct a scientific discussion.
- can give examples for a number of research topics in the field and explain the results.

2. Prerequisites

obligatory	48 ECTS-CP
recommended	MAC-210 or APO-220
Maximum number of students	10 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for MAC	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Guidelines, Presentations, Discussions, Feedback Sessions	English	10	2,0	30,0	150,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780765339]	Regular participation (see below)	graded	English	67%
Presentation [780765338]	Regular participation (see below)	graded	English	33%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Monika Hartmann

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Regular participation is requested to learn from others (regarding topics, methods, presentation styles), gain experience how to moderate and discuss other topics.

Minor Development Economics (DEV)

Requirements for the Minor Specification:
- Modules accounting to a minimum of 18 ECTS-CP in the Minor Specification

Every module can only be accounted once i.e. either for the Major or Minor Specification.

Module Title: Development Economics

Module ID/Code: APO-240 [780763240]

1. Content and intended learning outcomes

Learning content:	Empirical patterns in economic development, poverty analysis, economic growth models, causes of differential economic growth and development across countries, including the role of institutions, policies, climate change,and natural resource scarcities. Sustainable management of natural resources for development and poverty reduction: key theoretical concepts, critical discussion of empirical policy problems, policy evaluation.

Learning outcomes

After a successful completion of the course, the students…
- are able to describe economic growth models and the drivers of socio-economic development.
- can explain the role of institutions, labor markets, migration and sustainable natural resource management for economic development.
- are able to apply learned concepts for analysis of development polices.
- can analyse empirical examples through case studies.
- are able to generalize lessons learnt from case studies to broader development issues.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Development Economics	English	25	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780763249]		graded	English	100%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Matin Qaim

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Impact evaluation of conservation and development projects and environmental policies

Module ID/Code: ENV-130 [780764130]

1. Content and intended learning outcomes

Learning content:	- Role of impact evaluation in guiding the design of development and environmental conservation initiatives - Understanding and developing a theory of change - Overview, hands-on application, and critical assessment of quantitative evaluation methods including experimental and quasi-experimental research designs - Evaluation case studies; advanced topics, such as impact heterogeneity and mediation analysis.

Learning outcomes

After a successful completion of the course, the students…
- know alternative quantitative evaluation methods and their underlying assumptions.
- understand how different types of biases affect evaluations of development and conservation initiatives.
- apply selected evaluation methods to real world problems.
- critically interpret findings from evaluation studies.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	25 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Impact Evaluation	English	25	2,0	30,0	60,0
T	during the semester	Exercise	English	25	2,0	30,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780764139]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Food security and sustainable food systems

Module ID/Code: APO-260 [780763260]

1. Content and intended learning outcomes

Learning content:	Students will learn to look at agriculture and nutrition through a food systems lens and understand synergies and tradeoffs between human health and environmental health goals. Concepts and measurement of food security, dietary quality, and the triple burden of malnutrition, as well as related policy interventions, will be discussed. Links between agriculture, biodiversity, climate change, diets, nutrition, and health will be analyzed from a global perspective and with empirical examples from low-, middle-, and high-income countries. Case studies will be used to evaluate specific food systems topics from a comprehensive sustainable development perspective. Case studies will include topics such as organic farming, GMOs, meat consumption, palm oil, nutrition-sensitive agriculture, and the supermarket revolution, among others.

Learning outcomes

After a successful completion of the course, the students…
- are able to define key terms related to food security and sustainable diets.
- can explain how food systems relate to the various sustainable development goals (SDGs).
- can identify policy needs and analyze the sustainability implications of specific interventions.
- can evaluate the arguments in the public debate around sustainable agriculture and nutrition.
- can construct and use dietary surveys and nutrition assessment tools.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	1 or 3.
M.Sc. Agricultural Science and Resource Management in the Tropics and Subtropics (ARTS)	E	1.
M.Sc. Nutrition Science	E	3.
M.Sc. Molecular Food Technology	E	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester		English	120	4,0	56,0	124,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Written exam [780763269]		graded	English	100%

Academic Achievements

Module Title: Food security and sustainable food systems
Module ID/Code: APO-260 [780763260]
10. Module coordination
Module coordinator
Prof. Dr. Matin Qaim
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Minor Agroeconomic Modelling (MOD)

Requirements for the Minor Specification:
- Modules accounting to a minimum of 18 ECTS-CP in the Minor Specification

Every module can only be accounted once i.e. either for the Major or Minor Specification.

Module Title: Applied Modelling of Agricultural Systems

Module ID/Code: APO-220 [780763220]

1. Content and intended learning outcomes

Learning content:	In this course, the students jointly develop an or improve an existing partial or general equilibrium model and apply it to a topic chosen by them: - Decision on the topic to analyze - the supervisor will propose topics based on contact to institutions such as World Bank, OECD, FAO or the EU Commission - Decision on the appropriate type of simulation model (partial or general equilibrium, details on model structure) to apply - Acquisition of the necessary data and parameters - Coding of the model respectively the changes to an exisiting model - Mapping of the policy question into an appropriate shock definition of the equilibrium model - Performing and analyzing counterfactual runs - Documentation of the model (online, report) - Preparation of a presentation (ca. 30-45 minutes) and a report (ca. 50 page) for the client Students will present and disucss their findings after the end of the term in a video-conference or a meeting with the client with whom they will also share their report. The students organize the work themselves (milestones and their timining, labour division in groups). The supervisor will monitor and support the process when needed, especially with regard to technical and methodological questions.

Learning outcomes

After a successful completion of the course, the students…
- will have successfully applied a policy relevant equilibrium model.
- will have analyzed a real-world policy question based on quantitative tools.
- will have evaluated the impact of changes in policies on quantities, prices and welfare based on the application on the chosen and expanded equilibrium model.
- will synthetize these impacts in a presentation for the client and jointly document and comment them in a larger report.

2. Prerequisites

obligatory	
recommended	A course on partial and general equilibrium model such as "Partial and General Equilibrium Modelling" APO-250 (offered in 2. term of AFECO program)
Maximum number of students	20 students

3. Study program allocation

Study program	**Compulsory/ Elective**	**Semester**
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	**Interval**	**Topic**	**Language of instruction**	**Group size**	**SWS**	**Workload [h]**	
						Contact time	**Self-study**
Proj	during the semester		English	20	4,0	56,0	124,0

5. Course cycle	**6. Workload [h]**	**7. Duration**	**8. Credits (ECTS)**
WS	180	1	6,0

Module Title: Applied Modelling of Agricultural Systems

Module ID/Code: APO-220 [780763220]

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report (presentation) [780763229]		graded	English	50%
Report [780763228]		graded	English	50%

Academic Achievements

10. Module coordination

Module coordinator

PD Dr. Wolfgang Britz

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Presentation for client will be schuled after end of term, report has to be handed in 8 weeks after end of term.

Students will receive a course license for GAMS. Examples of past clients and themes: FAO (Rome): analysis of climate change impacts on agri-food markets in developing countries; OECD (Paris): analysis of the impact of the US/China trade ware on selected agri-food markets; GIZ (Bonn): analysis of policy options to foster the self-sufficiency in Western African rice markets; World Bank (Washington D.C.): Analysis of climate change impacts on households in selected developing countries in the context of the Socio-Economic Pathway 2

Module Title: Advanced Applied Econometrics

Module ID/Code: APO-230 [780763230]

1. Content and intended learning outcomes

Learning content:	- Review of the General Linear Model, OLS and GLS practicing matrix algebra - Model specification (functional form and variable choice) - Endogenous regressors and approachesd to instrumental variable estimation, Generalised Method of Moments, identification strategies - Panel data analysis - Maximum Likelihood Estimation - Limited dependent variable models

Learning outcomes

After a successful completion of the course, the students…
- are able to correctly interpret econometric content from textbooks and articles.
- are able to apply matrix algebra in the context of statistics.
- select appropriate econometric methods based on the analysis of the data situation and research question.
- correctly use and interpret outputs from econometric software packages.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L		Advanced Applied Econometrics	English	120	3,0	45,0	40,0
T		Advanced Applied Econometrics	English	20	1,0	15,0	80,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Assignment [780763239]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

11. Further information

Module Title: Partial and General Equilibrium Modelling

Module ID/Code: APO-250 [780763250]

1. Content and intended learning outcomes

Learning content:

1. Introduction: Why do we need simulation models? What are simulation models acting at market scale?
2. Introduction to GAMS
- Language structure
- A single market model in GAMS
3. Multi-Commodity models (MCMs)
- A simple multi-market model in GAMS
- Introducing policy instruments in a MCM
- Armington approach and spatial arbitrage
- Presentation of MCMs such as the Policy Evaluation Model of the OECD, the AgriSpace model for Norway and CAPRI
4. Computable General Equilibrium models
- The structure of a Social Accounting Matrix
- Typical structure of a CGE (production function, final demand, trade representation)
- SAM calibration and calibrating a CGE against the SAM
- Trade in CGEs (Armington, CET, Melitz model)
- Scenario analysis with CGEBox

Learning outcomes

After a successful completion of the course, the students…
- will be able to outline the building blocks of partial and general equilibrium models and describe the interactions inside and between these building blocks as expressed in their equations.
- will be able to change code of existing equilibrium models in the software package GAMS and conduct counterfactual analysis.
- will be able to analyze the outcome of such models against the background of micro-economic theory and their knowledge of agri-food markets and more general of the economic system.
- will be able to evaluate the impact of changes in policies on quantities, prices and welfare based on the application of equilibrium models.
- will be able to synthetize these impacts in a short report.

2. Prerequisites

obligatory	
recommended	A microeconomics course at master level such as BAS 130. That course is obligatory in the AFECO program. A course on Global Food Markets and Systems (BAS 140) is helpful.
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Partial and General Equilibrium Modelling	English	20	2,0	28,0	62,0
T	during the semester	Partial and General Equilibrium Modelling	English	20	2,0	28,0	62,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

Module Title: Partial and General Equilibrium Modelling				
Module ID/Code: APO-250 [780763250]				
9. Requirements for the rewarding of credits (ECTS)				
Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Term paper [780763259]		graded	English	
Academic Achievements				
10. Module coordination				
Module coordinator				
PD Dr. Wolfgang Britz				
Teaching person				
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/				
Institute/ Department				
Agrar-, Forst- und Ernährungswissenschaften				
11. Further information				
Students will receive a course license for GAMS. All material including the software code, slides used for teaching are made available via E-Campus. The term paper has to be handed in 8 weeks after semester end.				

Module Title: Bio-Economic Modelling At Farm-Scale

Module ID/Code: ENV-240 [780764240]

1. Content and intended learning outcomes

Learning content:

1. Introduction: Why do we need simulation models? What are farm-scale simulation models?
2. Introduction to Linear Programming
2.1 Assumptions of Linear Programming
2.2 Primal and dual solution
3. Introduction to GAMS
3.1 Language structure
3.2 A first simple GAMS model of a farm
4. Modelling core bio-economic interactions at farm scale
4.1 Herd dynamics, requirements and cost minimal feed mix
4.2 Crops, rotations, cropping intensity
4.3 Labour use
4.4 Combing the elements, integrating environment indicators
5. Modeling Investments and Financing Decisions
5.1 Maximizing Net Present Value
5.2 Accounting for depreciation
5.3 Indivisibilities in investments
5.4 Full financial plan and income tax
6. Modeling Risk and risk behavior
6.1 State of nature, decision under uncertainty, MOTAD and Target MOTAD
6.2 State contingent decision variables
6.3 Dynamic stochastic programming

Learning outcomes

After a successful completion of the course, the students…
- will be able to outline the building blocks of farm-scale bio-economic models and describe the interactions inside and between various sub-systems of a farm as expressed in a formal optimization model.
- will be able to write simple or change existing code of more complex farm-scale bio-economic models in the software package GAMS.
- will be able to analyze the outcome of such a model against the background of micro-economic theory.
- will be able to evaluate the impact of drivers of farm management decisions such as changes in input/output prices or farm-scale policies on economic and environmental indicators based on the application of a bio-economic model.
- will be able to synthetize these impacts in a short report.

2. Prerequisites

obligatory	
recommended	A microeconomics course at master level such as BAS-130 and a course on risk management such as BAS-150. Both courses are obligatory in the AFECO program.
Maximum number of students	20 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Bio-Economic Modelling At Farm-Scale	English	20	2,0	28,0	62,0
T	during the semester	Bio-Economic Modelling At Farm-Scale	English	20	2,0	28,0	62,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

Module Title: Bio-Economic Modelling At Farm-Scale				
Module ID/Code: ENV-240 [780764240]				
9. Requirements for the rewarding of credits (ECTS)				
Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Term paper [780764249]		graded	English	
Academic Achievements				
10. Module coordination				
Module coordinator				
PD Dr. Wolfgang Britz				
Teaching person				
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/				
Institute/ Department				
Agrar-, Forst- und Ernährungswissenschaften				
11. Further information				
Students will receive a course license for GAMS. All material including the software code, slides used for teaching are made available via E-Campus. The term paper has to be handed in 8 weeks after semester end.				

Module Title: Advanced Environmental Economics

Module ID/Code: ENV-210 [780764210]

1. Content and intended learning outcomes

Learning content:	Critical interpretation and discussion of theoretical models and applications in environmental and resource economics. Examples from forest and biodiversity conservation, pollution and waste, non-renewable resources, trans-boundary resource use, and international environmental agreements.

Learning outcomes

After a successful completion of the course, the students…
- critically discuss alternative theoretical approaches in environmental and resource economics.
- understand the implications of assumptions in formal economic models for real world applications.
- apply theory and numerical techniques to solve common problems in environmental and resource economics.

2. Prerequisites

obligatory	
recommended	Sustainability Economics
Maximum number of students	25 students

3. Study program allocation

Study program	**Compulsory/ Elective**	**Semester**
M.Sc. Agricultural and Food Economics	E	3.

4. Teaching and learning methodes

Type of course	**Interval**	**Topic**	**Language of instruction**	**Group size**	**SWS**	**Workload [h]**	
						Contact time	**Self-study**
L	during the semester	Advanced Environmental Economics	English	25	2,0	30,0	0,0
T	during the semester	Assignment	English	25	2,0	30,0	120,0

5. Course cycle	**6. Workload [h]**	**7. Duration**	**8. Credits (ECTS)**
WS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Oral exam [20 min] [780764219]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Data Wrangling, Visualization and GIS Data Analysis with R

Module ID/Code: ENV-270 [780764270]

1. Content and intended learning outcomes

Learning content:	Students will learn how to effectively prepare and visualize data and research results in different ways. Different types of data visualization in particular different kinds of plotting methods will be shown and applied in exercises. Particular emphasis will be given to spatial data and GIS analyses. Students will learn about the basics of GIS and spatial data projections, different spatial data types including raster and vector data, how to import and visualize them and how to combine them in spatial analyses. They will specifically learn how to work with spatial data in R and how to use this free and open source tool to visualize their results in publication ready maps. Students will apply the methods to visualize data of their own choice and present their results during the course.

Learning outcomes

After a successful completion of the course, the students…
- understand the peculiarities of different data formats and how to work with them.
- understand the basics of GIS.
- are able to work with different data in R.
- are able to visualize different data in R.
- conduct spatial analyses with data of different formats.
- are able to apply the packages and methods learned to their own case studies.
- are able to conduct their own analyses and to visualize publication-ready maps.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	25 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	E	2.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	during the semester	Data Wrangling, Visualization and GIS Data Analysis with R	English	25	2,0	30,0	60,0
T	during the semester	Solving Exercises Together	English	25	2,0	30,0	60,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Report [780764279]		graded	English	50%
Presentation [780764278]	Submission of all reports	graded	English	50%

Academic Achievements

Module Title: Data Wrangling, Visualization and GIS Data Analysis with R
Module ID/Code: ENV-270 [780764270]
10. Module coordination
Module coordinator
Jun.-Prof. Dr. Lisa Biber-Freudenberger
Teaching person
The teaching persons in the current semester can be found in basis: https://basis.uni-bonn.de/
Institute/ Department
Agrar-, Forst- und Ernährungswissenschaften
11. Further information

Practice-oriented Track for Major „Transformation and Innovation in the Agricultural Sector “

Each of the four AFECO major tracks (Transformation and Innovation in the Agricultural Sector – ABS, Agricultural and Development Policy – APO, Resource and Environmental Economics – ENV, and Consumer and Market Research – MAC) can be combined with a compulsory internship, a research seminar linking the pratice-oriented experience with the development of a research proposal, and with a Master thesis rooted in the work carried out during the internship. This amounts to the completion of a “Practice-oriented Track in [the chosen thematic major track]”.

Students electing to follow a practice-oriented track for their major need to combine the following elements to complete their master program:

- Compulsory modules of the practice-oriented major, in the selected track and amounting to 42 ECTS-CP (the compulsory internship (6 ECTS-CP), the practice-oriented Research Seminar (6 ECTS-CP, either ABS-330 or ABS-335 for the ABS major) and the practice-oriented Master thesis (30 ECTS-CP)

- Elective modules of the selected track amounting to 30 ECTS-CP (as per elective modules listed for each of the Major tracks above)

- Elective and / or free elective modules amounting to 18 ECTS-CP

Module Title: Internship in Agricultural and Food Economics

Module ID/Code: ILR-02 [780760010]

1. Content and intended learning outcomes

Learning content:	Students learn to apply knowledge and skills acquired during the course of study, to execute certain professional skills better and to work independently and expand the professional network. The internship includes a minimum of four weeks of full time work in a relevant field outside the university. It can be performed at research institutes, private companies or governmental and non-governmental institutions. The internship is completed by an internship report and a presentation in class.

Learning outcomes

After a successful completion of the course, the students…
- are able to transfer theoretical knowledge into the professional work environment.
- have acquired knowledge and skills in a professional work environment.
- have the ability to present experiences.
- have gained enhanced reflexion capability on own expectations and experiences.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
I*[1,2] (blocked)	full-day block		English	1	0,5	10,0	170,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
none				

Academic Achievements

- minimum of four weeks of full time work in a relevant field outside the university
- internship report and presentation

10. Module coordination

Module coordinator

Dr. Nicolas Gerber

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

[1] the internship must be arranged by the students and authorized by the internship coordinator prior to the starting date
[2] only internships completed after award of the Bsc. degree can be considered
language can be German or English

Module Title:	**Practice-oriented Research Seminar in Transformation and Innovation in the Agricultural Sector**
Module ID/Code:	ABS-331 [780762330]

1. Content and intended learning outcomes

Learning content:	Literature reviews, preparation of a research concept and a thesis proposal; scientific presentations and discussions of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- can describe the problem background of a chosen topic after conducting a literature review.
- can infer a research question or a testable hypothesis from a problem statement.
- can assess, select and compare state-of-the-art research articles in the relevant field.
- have determined an approproate methodology relevant for the research question(s).
- have developed the concept of their Master thesis, including work plan and expected outcomes.

2. Prerequisites

obligatory	48 ECTS-CP (including registration to the internship module ILR-02)
recommended	ABS-120 Methods in Management Research
Maximum number of students	

3. Study program allocation

Study program	**Compulsory/ Elective**	**Semester**
M.Sc. Agricultural and Food Economics	C for ABS	3.

4. Teaching and learning methodes

Type of course	**Interval**	**Topic**	**Language of instruction**	**Group size**	**SWS**	**Workload [h]**	
						Contact time	**Self-study**
S*	during the semester	Class discussions, presentations, feedback sessions	English	30	2,0	60,0	20,0
S*	during the semester	Own research, writing a term paper	English	30	0,0	0,0	100,0

5. Course cycle	**6. Workload [h]**	**7. Duration**	**8. Credits (ECTS)**
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	**Prerequisites for admission to the Assessment**	**Graded yes/no**	**Language (exam)**	**Weighting factor**
Report (presentation) [780762339]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Dr. Daniel Hermann

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Writing guidelines and info leaflet about the Master thesis process can be found under: https://www.afeco.uni-bonn.de/while-studying

Module Title: Practice-oriented Research Seminar in Innovation Management and Entrepreneurship

Module ID/Code: ABS-336

1. Content and intended learning outcomes

Learning content:	Literature reviews, preparation of a research concept and a thesis proposal; scientific presentations and discussions of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- can describe the problem background of a chosen topic after conducting a literature review.
- can infer a research question or a testable hypothesis from a problem statement.
- can assess, select and compare state-of-the-art research articles in the relevant field.
- have determined an approproate methodology relevant for the research question(s).
- have developed the concept of their Master thesis, including work plan and expected outcomes.

2. Prerequisites

obligatory	48 ECTS-CP
recommended	ABS-120 Methods in Management Research
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for ABS	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Class discussions, presentations, feedback sessions	English	30	2,0	60,0	20,0
S*	during the semester	Own research, writing a term paper	English	30	0,0	0,0	100,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780762378]	Regular participation to learn from others	graded	English	60%
Presentation [780762379]	Regular participation to learn from others	graded	English	40%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. David Antons

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Writing guidelines and info leaflet about the Master thesis process can be found under: https://www.afeco.uni-bonn.de/while-studying

Module Title: Practice-oriented Masterthesis

Module ID/Code: M-402 [8900]

1. Content and intended learning outcomes

Learning content:	Independent work on a research project in the field of the research groups within a given time frame. Details are specified in the examination regulation and examination organization regulation (available only in German). The topic addressed in the thesis must be chosen with the supervisor and thematic links shall be made to the compulsory internship ILR-02.

Learning outcomes

After a successful completion of the course, the students…
- can work independently and efficiently.
- know how to handle feedback from supervisors.
- can define a practice-oriented research question.
- can build a sound theoretical and methodological framework.
- can collect data in a systematic and verifiable manner.
- analyse data critically and correctly.
- can formulate sound conclusions based on a comprehensive discussion of the results.
- can write a comprehensive, consistent and concise thesis.
- The editing time is a minimum of two and a maximum of six months.

2. Prerequisites

obligatory	Registered in either ABS-331 or ENV-331 or MAC-331 or APO-331 depending on the research group of the supervisors and completed at least 60 CP
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	4.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
	full-day block	Research project work	English	1	0,0	15,0	885,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	900	1	30,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Masterthesis [8900]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

All independent teaching staff

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Practice-oriented Track for Major „Agricultural and Development Policy“

Each of the four AFECO major tracks (Transformation and Innovation in the Agricultural Sector – ABS, Agricultural and Development Policy – APO, Resource and Environmental Economics – ENV, and Consumer and Market Research – MAC) can be combined with a compulsory internship, a research seminar linking the pratice-oriented experience with the development of a research proposal, and with a Master thesis rooted in the work carried out during the internship. This amounts to the completion of a “Practice-oriented Track in [the chosen thematic major track]”.

Students electing to follow a practice-oriented track for their major need to combine the following elements to complete their master program:

- **Compulsory modules of the practice-oriented major, in the selected track and amounting to 42 ECTS-CP (the compulsory internship (6 ECTS-CP), the practice-oriented Research Seminar (6 ECTS-CP) and the practice-oriented Master thesis (30 ECTS-CP)**
- **Elective modules of the selected track amounting to 30 ECTS-CP (as per elective modules listed for each of the Major tracks above)**
- **Elective and / or free elective modules amounting to 18 ECTS-CP**

Module Title: Internship in Agricultural and Food Economics

Module ID/Code: ILR-02 [780760010]

1. Content and intended learning outcomes

Learning content:	Students learn to apply knowledge and skills acquired during the course of study, to execute certain professional skills better and to work independently and expand the professional network. The internship includes a minimum of four weeks of full time work in a relevant field outside the university. It can be performed at research institutes, private companies or governmental and non-governmental institutions. The internship is completed by an internship report and a presentation in class.

Learning outcomes

After a successful completion of the course, the students…
- are able to transfer theoretical knowledge into the professional work environment.
- have aquired knowledge and skills in a professional work environment.
- have the ability to present experiences.
- have gained enhanced reflexion capability on own expectations and experiences.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
I*[1,2] (blocked)	full-day block		English	1	0,5	10,0	170,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
none				

Academic Achievements

- minimum of four weeks of full time work in a relevant field outside the university
- internship report and presentation

10. Module coordination

Module coordinator

Dr. Nicolas Gerber

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

[1] the internship must be arranged by the students and authorized by the internship coordinator prior to the starting date
[2] only internships completed after award of the Bsc. degree can be considered
language can be German or English

Module Title: Practice-oriented Research Seminar in Agricultural and Development Policy

Module ID/Code: APO-331 [780763330]

1. Content and intended learning outcomes

Learning content:	Literature studies, preparation of a research concept and a proposal, presentations of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- can describe the problem background of a chosen topic after conducting a literature review.
- can infer a research question or a testable hypothesis from a problem statement.
- can assess, select and compare state-of-the-art research articles in the relevant field.
- have determined an appropriate methodology relevant for the research question(s) after evaluation of alternative approaches.
- have developed the concept of their Master thesis, including work plan and expected outcomes.

2. Prerequisites

obligatory	48 ECTS-CP (including registration to the internship module ILR-02)
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for APO	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Class discussions, presentations, feedback sessions	English	15	2,0	30,0	30,0
S*	during the semester	Own research, writing term paper	English	15	0,0	0,0	120,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780763339]	Regular participation to learn from others	graded	English	67%
Presentation [780763338]	Regular participation to learn from others	graded	English	33%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Thomas Heckelei

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Practice-oriented Masterthesis

Module ID/Code: M-402 [8900]

1. Content and intended learning outcomes

Learning content:	Independent work on a research project in the field of the research groups within a given time frame. Details are specified in the examination regulation and examination organization regulation (available only in German). The topic addressed in the thesis must be chosen with the supervisor and thematic links shall be made to the compulsory internship ILR-02.

Learning outcomes

After a successful completion of the course, the students…
- can work independently and efficiently.
- know how to handle feedback from supervisors.
- can define a practice-oriented research question.
- can build a sound theoretical and methodological framework.
- can collect data in a systematic and verifiable manner.
- analyse data critically and correctly.
- can formulate sound conclusions based on a comprehensive discussion of the results.
- can write a comprehensive, consistent and concise thesis.
- The editing time is a minimum of two and a maximum of six months.

2. Prerequisites

obligatory	Registered in either ABS-331 or ENV-331 or MAC-331 or APO-331 depending on the research group of the supervisors and completed at least 60 CP
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	4.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
	full-day block	Research project work	English	1	0,0	15,0	885,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	900	1	30,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Masterthesis [8900]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

All independent teaching staff

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Practice-oriented Track for Major „Resource and Environmental Economics“

Each of the four AFECO major tracks (Transformation and Innovation in the Agricultural Sector – ABS, Agricultural and Development Policy – APO, Resource and Environmental Economics – ENV, and Consumer and Market Research – MAC) can be combined with a compulsory internship, a research seminar linking the pratice-oriented experience with the development of a research proposal, and with a Master thesis rooted in the work carried out during the internship. This amounts to the completion of a “Practice-oriented Track in [the chosen thematic major track]”.

Students electing to follow a practice-oriented track for their major need to combine the following elements to complete their master program:

- Compulsory modules of the practice-oriented major, in the selected track and amounting to 42 ECTS-CP (the compulsory internship (6 ECTS-CP), the practice-oriented Research Seminar (6 ECTS-CP) and the practice-oriented Master thesis (30 ECTS-CP)

- Elective modules of the selected track amounting to 30 ECTS-CP (as per elective modules listed for each of the Major tracks above)

- Elective and / or free elective modules amounting to 18 ECTS-CP

Module Title: Internship in Agricultural and Food Economics

Module ID/Code: ILR-02 [780760010]

1. Content and intended learning outcomes

Learning content:	Students learn to apply knowledge and skills acquired during the course of study, to execute certain professional skills better and to work independently and expand the professional network. The internship includes a minimum of four weeks of full time work in a relevant field outside the university. It can be performed at research institutes, private companies or governmental and non-governmental institutions. The internship is completed by an internship report and a presentation in class.

Learning outcomes

After a successful completion of the course, the students…
- are able to transfer theoretical knowledge into the professional work environment.
- have acquired knowledge and skills in a professional work environment.
- have the ability to present experiences.
- have gained enhanced reflexion capability on own expectations and experiences.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
I*[1,2] (blocked)	full-day block		English	1	0,5	10,0	170,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
none				

Academic Achievements

- minimum of four weeks of full time work in a relevant field outside the university
- internship report and presentation

10. Module coordination

Module coordinator

Dr. Nicolas Gerber

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

[1] the internship must be arranged by the students and authorized by the internship coordinator prior to the starting date
[2] only internships completed after award of the Bsc. degree can be considered
language can be German or English

Module Title: Practice-oriented Research Seminar in Resource and Environmental Economics

Module ID/Code: ENV-331 [780764330]

1. Content and intended learning outcomes

Learning content:	Literature studies, preparation of a research concept and a proposal; presentations of the state of the art in a thematic field which is close to the research question; scientific discussion of own research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- synthesize the scientific state of the art in a self-selected field of research.
- construct a conceptual framework in social science / environmental economics.
- develop and present a research proposal.
- engage in scientific debates.

2. Prerequisites

obligatory	48 ECTS-CP (including registration to the internship module ILR-02)
recommended	Sustainability Economics
Maximum number of students	15 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for ENV	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Class discussions, presentations, feedback sessions	English	15	2,0	30,0	30,0
S*	during the semester	Own research, writing term paper	English	15	0,0	0,0	120,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780764339]	Regular participation to learn from others and enable others to learn	graded	English	60%
Presentation [780764338]	Regular participation to learn from others and enable others to learn	graded	English	40%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Jan Börner

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Module Title: Practice-oriented Masterthesis

Module ID/Code: M-402 [8900]

1. Content and intended learning outcomes

Learning content:	Independent work on a research project in the field of the research groups within a given time frame. Details are specified in the examination regulation and examination organization regulation (available only in German). The topic addressed in the thesis must be chosen with the supervisor and thematic links shall be made to the compulsory internship ILR-02.

Learning outcomes

After a successful completion of the course, the students…
- can work independently and efficiently.
- know how to handle feedback from supervisors.
- can define a practice-oriented research question.
- can build a sound theoretical and methodological framework.
- can collect data in a systematic and verifiable manner.
- analyse data critically and correctly.
- can formulate sound conclusions based on a comprehensive discussion of the results.
- can write a comprehensive, consistent and concise thesis.
- The editing time is a minimum of two and a maximum of six months.

2. Prerequisites

obligatory	Registered in either ABS-331 or ENV-331 or MAC-331 or APO-331 depending on the research group of the supervisors and completed at least 60 CP
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	4.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
	full-day block	Research project work	English	1	0,0	15,0	885,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	900	1	30,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Masterthesis [8900]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

All independent teaching staff

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Practice-oriented Track for Major „Market and Consumer Research“

Each of the four AFECO major tracks (Transformation and Innovation in the Agricultural Sector – ABS, Agricultural and Development Policy – APO, Resource and Environmental Economics – ENV, and Consumer and Market Research – MAC) can be combined with a compulsory internship, a research seminar linking the pratice-oriented experience with the development of a research proposal, and with a Master thesis rooted in the work carried out during the internship. This amounts to the completion of a “Practice-oriented Track in [the chosen thematic major track]”.

Students electing to follow a practice-oriented track for their major need to combine the following elements to complete their master program:

- Compulsory modules of the practice-oriented major, in the selected track and amounting to 42 ECTS-CP (the compulsory internship (6 ECTS-CP), the practice-oriented Research Seminar (6 ECTS-CP) and the practice-oriented Master thesis (30 ECTS-CP)

- Elective modules of the selected track amounting to 30 ECTS-CP (as per elective modules listed for each of the Major tracks above)

- Elective and / or free elective modules amounting to 18 ECTS-CP

Module Title: Internship in Agricultural and Food Economics

Module ID/Code: ILR-02 [780760010]

1. Content and intended learning outcomes

Learning content:	Students learn to apply knowledge and skills acquired during the course of study, to execute certain professional skills better and to work independently and expand the professional network. The internship includes a minimum of four weeks of full time work in a relevant field outside the university. It can be performed at research institutes, private companies or governmental and non-governmental institutions. The internship is completed by an internship report and a presentation in class.

Learning outcomes

After a successful completion of the course, the students…
- are able to transfer theoretical knowledge into the professional work environment.
- have acquired knowledge and skills in a professional work environment.
- have the ability to present experiences.
- have gained enhanced reflexion capability on own expectations and experiences.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
I*[1,2] (blocked)	full-day block		English	1	0,5	10,0	170,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
none				

Academic Achievements

- minimum of four weeks of full time work in a relevant field outside the university
- internship report and presentation

10. Module coordination

Module coordinator

Dr. Nicolas Gerber

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

[1] the internship must be arranged by the students and authorized by the internship coordinator prior to the starting date
[2] only internships completed after award of the Bsc. degree can be considered
language can be German or English

Module Title: Practice-oriented Research Seminar in Market and Consumer Research

Module ID/Code: MAC-331 [780765330]

1. Content and intended learning outcomes

Learning content:	Literature studies, preparation of a research concept and a proposal, presentations of the state of the art in a thematic field of Market and Consumer Research; scientific discussion of own practice oriented research topic and topic of others in the seminar.

Learning outcomes

After a successful completion of the course, the students…
- gained proficiency in synthesizing the state of the art in the field of their practice oriented research project.
- are able to select and comprehend (an) appropriate theory/ies for their practice oriented research project.
- know how to derive testable hypotheses or research questions from relevant theoretical models and from a review of the relevant empirical literature.
- have decided for an appropriate methodology to be applied in their practice oriented research project.
- are able to plan a research project.
- can moderate and conduct a scientific discussion.

2. Prerequisites

obligatory	48 ECTS-CP (including registration to the internship module ILR-02)
recommended	MAC-210 or APO-220
Maximum number of students	10 students

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C for MAC	3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
S*	during the semester	Guidelines, Presentations, Discussions, Feedback Sessions	English	10	2,0	30,0	150,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Term paper [780765339]	Regular participation (see below)	graded	English	67%
Presentation [780765338]	Regular participation (see below)	graded	English	33%

Academic Achievements

10. Module coordination

Module coordinator

Prof. Dr. Monika Hartmann

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Regular participation is requested to learn from others (regarding topics, methods, presentation styles), gain experience how to moderate and discuss other topics.

Module Title: Practice-oriented Masterthesis

Module ID/Code: M-402 [8900]

1. Content and intended learning outcomes

Learning content:	Independent work on a research project in the field of the research groups within a given time frame. Details are specified in the examination regulation and examination organization regulation (available only in German). The topic addressed in the thesis must be chosen with the supervisor and thematic links shall be made to the compulsory internship ILR-02.

Learning outcomes

After a successful completion of the course, the students…
- can work independently and efficiently.
- know how to handle feedback from supervisors.
- can define a practice-oriented research question.
- can build a sound theoretical and methodological framework.
- can collect data in a systematic and verifiable manner.
- analyse data critically and correctly.
- can formulate sound conclusions based on a comprehensive discussion of the results.
- can write a comprehensive, consistent and concise thesis.
- The editing time is a minimum of two and a maximum of six months.

2. Prerequisites

obligatory	Registered in either ABS-331 or ENV-331 or MAC-331 or APO-331 depending on the research group of the supervisors and completed at least 60 CP
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	4.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
	full-day block	Research project work	English	1	0,0	15,0	885,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	900	1	30,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Masterthesis [8900]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

All independent teaching staff

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

Free elective module

A maximum of 12 ECTS-CP can be completed from free elective modules.

Module Title: Internship in Agricultural and Food Economics

Module ID/Code: ILR-01 [780760010]

1. Content and intended learning outcomes

Learning content:	Students learn to apply knowledge and skills acquired during the course of study, to execute certain professional skills better and to work independently and expand the professional network. The internship includes a minimum of four weeks of full time work in a relevant field outside the university. It can be performed at research institutes, private companies or governmental and non-governmental institutions. The internship is completed by an internship report and a presentation in class.

Learning outcomes

After a successful completion of the course, the students…
- are able to transfer theoretical knowledge into the professional work environment.
- have acquired knowledge and skills in a professional work environment.
- have the ability to present experiences.
- have gained enhanced reflexion capability on own expectations and experiences.

2. Prerequisites

obligatory	
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	1.-3.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
I[1,2] (blocked)	full-day block		English	1	0,5	10,0	170,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
none				

Academic Achievements

- minimum of four weeks of full time work in a relevant field outside the university
- internship report and presentation

10. Module coordination

Module coordinator

Dr. Nicolas Gerber

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information

[1] the internship must be arranged by the students and authorized by the internship coordinator prior to the starting date
[2] only internships completed after award of the Bsc. degree can be considered
language can be German or English

Modultitel:	**Seminar zur Betriebsentwicklung im Organischen Landbau**
Modulnr./-code:	NPW-052 [780800520]

1. Inhalt und Qualifikationsziele

Inhalte:	Inhalte sind die Analyse des Ist-Zustands realer ökologisch wirtschaftender Betriebe bzw. konventioneller Umstellungsbetriebe und Erarbeitung von Optimierungspotenzialen hinsichtlich Fruchtfolgegestaltung, Nährstoff- und Humusbilanz, Tierhaltung und -fütterung, Umwelt- und Naturschutzleistungen sowie Arbeitsorganisation und Betriebswirtschaft. In Kleingruppen von Studierenden werden die Bereiche Pflanzenbau, Tierhaltung, Ökonomie und Naturschutz bearbeitet. Die Gruppen zu Pflanzenbau und Naturschutz werden durch Lehrende des Fachgebietes AOL betreut, die Gruppen zu Tierhaltung und Ökonomie haben die Möglichkeit sich mit Öko-FachberaterInnen auszutauschen. Im Wintersemester werden nach einer gemeinsamen Vorbesprechung auf einer gemeinsamen Exkursion, evtl. ergänzt durch weitere, individuelle Besuche der Studierenden, die nötigen Daten mittels BetriebsleiterInnenbefragung gesammelt. Die Daten werden in der Mitte des Semesters im Rahmen eines Kolloquiums qualitativ dargestellt, und die Studierenden legen ein Konzept dafür vor, wie sie die Daten im Laufe des Semesters für die quantitative Abbildung des Ist-Zustands und die Analyse eines gemeinsam festgelegten Optimierungspotenzials nutzen werden. Die Daten werden dann unter Zuhilfenahme von validierten Methoden (u.a. Naturschutzleistungen: ÖKABB und Methode nach Gottwald und Stein-Bachinger 2016) und geeigneter Software (z.B. Nährstoff- und Humusbilanzen: REPRO, Fruchtfolgeplanung: ROTOR) ausgewertet. Abschließend werden die Ergebnisse mit den BetriebsleiterInnen und FachberaterInnen diskutiert.

Qualifikationsziele/ Kompetenzen

Nach erfolgreichem Abschluss des Moduls, können die Studierenden…
- vorhandenes Grundlagenwissen aus dem Bachelorstudium vertiefen und verknüpfen.
- multifunktionale Effekte landwirtschaftlicher Betriebe verstehen und benennen.
- mit verschiedenen Modellen zur Bewertung landwirtschaftlicher Betriebe umgehen.
- einen realen landwirtschaftlichen Betrieb mit moderner Methodik erfassen und optimieren.
- Effekte der landwirtschaftlichen Produktion auf das Agrarökosystem beurteilen.
- Optimierungsansätze auf Betriebsebene auf wissenschaftlicher Basis entwickeln.
- Fachwissen aus der eigenen Spezialisierung im Masterstudium kontextualisieren und interdisziplinär in einer angewandten Fragestellung zusammenführen.
- mit BetriebsleiterInnen und FachberaterInnen kommunizieren.
- autökologische Kenntnisse ausgewählter Arten- bzw. Artengruppen anwenden, um die Bedeutung bestimmter Betriebsrequisiten für die Biodiversität einschätzen zu können.

2. Voraussetzungen für die Teilnahme am Modul

Verpflichtend nachzuweisen	
empfohlen	
Beschränkung der Teilnehmerzahl	25 Studierende

3. Verwendbarkeit des Moduls

Studiengang/Teilstudiengang	**Pflicht/ Wahlpflicht**	**Fachsemester**
M.Sc. Agricultural and Food Economics (AFECO)	fWP	3.
M.Sc. Naturschutz und Landschaftsökologie	fWP	3.
M.Sc. Nutzpflanzenwissenschaften	WP SP PERC	3.
M.Sc. Tierwissenschaften	fWP	3.

4. Lehr- und Lernformen

LV-Art	**Durch-führung**	**Thema**	**Unterrichts-sprache**	**Gruppen-größe**	**SWS**	**Workload [h]**	
						Präsenz-zeit	**Selbst-studium**
S	Semester-begleitend	Datenerhebung, Betriebsanalyse, Optimierung	Deutsch	25	2,0	30,0	150,0

5. Häufigkeit	**6. Arbeitsaufwand [h]**	**7. Dauer**	**8. ECTS-LP**
WS	180	1	6,0

Modultitel:	**Seminar zur Betriebsentwicklung im Organischen Landbau**			
Modulnr./-code:	NPW-052 [780800520]			
9. Voraussetzungen für die Vergabe von Leistungspunkten entsprechend dem ECTS				
Prüfungsform	**Zulassungsvoraussetzung**	**Benotet/ unbenotet**	**Prüfungs-sprache**	**Gewichtung**
Präsentation [780800529]		benotet	Deutsch	33%
Bericht [780800528]		benotet	Deutsch	67%
Studienleistung(en)				
10. Modulorganisation				
Modulverantwortliche(r)				
Prof. Dr. Thomas Döring				
Lehrende(r)				
Die durchführenden Lehrpersonen im aktuellen Semester finden Sie in basis: https://basis.uni-bonn.de/				
Anbietende Organisationseinheit(en)				
Agrar-, Forst- und Ernährungswissenschaften				
11. Sonstiges				
Gottwald F. and Stein-Bachinger K. (2016): Landwirtschaft für Artenvielfalt - Ein Naturschutzmodul für ökologisch bewirtschaftete Betriebe. 2. Auflage, 208 S. www.landwirtschaft-artenvielfalt.de Küstermann, B., Christen, O., Hülsbergen, K.-J., 2009: Modelling nitrogen cycles of farming systems as basis of site- and farm-specific nitrogen management. Agriculture, Ecosystems and Environment. 135, 70-80 Modernes Agrarmanagement: Betriebswirtschaftliche Analyse- und Planungsverfahren | Oliver Mußhoff, Norbert Hirschauer | ISBN: 9783800652525 | Verlag Vahlen 4. Auflage 2016. https://www.beck-elibrary.de/10.15358/9783800644575/modernes-agrarmanagement				

Module title: Environmental Governance

Modul ID/Code: ILR-03 [780760030]

1. Content and intended learning outcomes

Learning content:	Governance is a set of social processes and structures guiding individual, group and organizational behavior. The course provides a detailed overview of different governance theories and approaches to address environmental and sustainability challenges. The course examines why collective action problems arise between individual and group interests, and how different governance theories help explain different ways of organizing society and social institutions to shape our behavior, incentives and outcomes. A variety of different governance theories will be reviewed to compare their analytical potential and challenges, and furthermore examine how different governance theories from different disciplinary perspectives are useful for understanding the current complexity of environmental and sustainability problems. The role of interdisciplinary science will be explored in order to advance the understanding of complex human-environmental systems and their governance.

Learning outcomes

- Understanding of how governance problems arise, the role of collective action and collective action problems, and why governance is a central social factor guiding individual, group and organizational behavior
- Knowledge of key social science terminology and concepts including institutions, rules, norms, social networks, and human behavior
- Knowledge of scales and cross-scale issues
- Understanding the most prominent environmental governance theories across disciplines, their differences, analytical advantages and shortcomings
- Critical thinking about environmental problems with a detailed understanding of how social institutions and organizations are organized and could be re-organized.
- Knowledge of systems thinking approaches and current research frontiers in environmental governance
- Knowledge of real case studies with different governance problems and solutions.
- The ability to diagnose governance challenges in new cases with existing theories and frameworks

2. Prerequisites

obligatory	none
recommended	Knowledge of institutional economics or political science Knowledge of social and environmental sustainability concepts
Maximum number of students	

3. Study program allocation

Study program	Compulsory/elective	Semester
M.Sc. Agricultural Science and Resource Management in the Tropics (ARTS)	E	1.-4.
M.Sc. Agriculture and Food Economics (AFECO)	E	1.-4.
M.Sc. Nature Conservation and Landscape Ecology	E	1.-4.

4. Teaching and learning methods

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
L	During the semester	Environmental governance	English	180	4,0	45	135

5. Course cycle	6. Workload [h]	7. Duration	8. Credits
WS/SS	180	1	6,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Examination language	Weighting factor
Presentation		graded	English	33,3%
Project work		graded	English	33,3%
Written exam		graded	English	33,3%

Studienleistung(en)

Module title:	**Environmental Governance**
Modul ID/Code:	ILR-03 [780760030]
10. Modulorganisation	
Modulverantwortliche(r)	
Stefan Partelow	
Lehrende(r)	
Die durchführenden Lehrpersonen im aktuellen Semester finden Sie in basis: https://basis.uni-bonn.de/	
Anbietende Organisationseinheit(en)	
Agrar-, Forst- und Ernährungswissenschaften	
11. Sonstiges	

Masterthesis

The masterthesis credits 30 ECTS-CP.

Module Title: Masterthesis

Module ID/Code: M-401 [8900]

1. Content and intended learning outcomes

Learning content:	Independent work on a research project in the field of the research groups within a given time frame. Details are specified in the examination regulation and examination organization regulation (available only in German).

Learning outcomes

After a successful completion of the course, the students…
- can work independently and efficiently.
- know how to handle feedback from supervisors.
- can define a research question.
- can build a sound theoretical and methodological framework.
- can collect data in a systematic and verifiable manner.
- analyse data critically and correctly.
- can formulate sound conclusions based on a comprehensive discussion of the results.
- can write a comprehensive, consistent and concise thesis.
- The editing time is a minimum of two and a maximum of six months.

2. Prerequisites

obligatory	Registered in either ABS-330 or ENV-330 or MAC-330 or APO-330 depending on the research group of the supervisors and completed at least 60 CP
recommended	
Maximum number of students	

3. Study program allocation

Study program	Compulsory/ Elective	Semester
M.Sc. Agricultural and Food Economics	C	4.

4. Teaching and learning methodes

Type of course	Interval	Topic	Language of instruction	Group size	SWS	Workload [h]	
						Contact time	Self-study
	full-day block	Research project work	English	1	0,0	15,0	885,0

5. Course cycle	6. Workload [h]	7. Duration	8. Credits (ECTS)
WS/SS	900	1	30,0

9. Requirements for the rewarding of credits (ECTS)

Types of Assessment	Prerequisites for admission to the Assessment	Graded yes/no	Language (exam)	Weighting factor
Masterthesis [8900]		graded	English	

Academic Achievements

10. Module coordination

Module coordinator

All independent teaching staff

Teaching person

The teaching persons in the current semester can be found in basis:
https://basis.uni-bonn.de/

Institute/ Department

Agrar-, Forst- und Ernährungswissenschaften

11. Further information