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Zwölfte Ordnung zur Änderung der Prüfungs- und Studienordnung für den konsekutiven Master-Studiengang „Sustainable International Agriculture“ der Universität Kassel und der Georg-August-Universität Göttingen vom 17. Juli 2024

Die Prüfungs- und Studienordnung für den konsekutiven Master-Studiengang „Sustainable International Agriculture“ der Universität Kassel und der Georg-August-Universität Göttingen vom 21. Oktober 2011 (MittBl. 1/*2012, S. 26*), zuletzt geändert am 12.07.2023 (MittBl. 6/2024, S. 46), wird wie folgt geändert:

Artikel 1 Änderungen

2. Die Anlage 1 wird wie folgt neu gefasst:

Anlage 1: Modulübersicht

Es müssen insgesamt wenigstens 120 Anrechnungspunkte nach Maßgabe der nachfolgenden Bestimmungen erworben werden.

a) Studienschwerpunkte
Es muss ein Studienschwerpunkt im Umfang von insgesamt wenigstens 90 C erfolgreich absolviert werden.

aa) International Agribusiness and Rural Development Economics

i) Pflichtmodule
Es müssen folgende Pflichtmodule im Umfang von insgesamt 24 C erfolgreich absolviert werden:
M.Agr.0086: World agricultural markets and trade (6 C, 6 SWS).
M.SIA.E11: Socioeconomics of Rural Development and Food Security (6 C, 4 SWS)
M.SIA.I12: Sustainable International Agriculture: basic principles and approaches (6 C, 4 SWS)
M.WIWI-QMW.0004: Econometrics I (6 C, 4 SWS)

ii) Wahlpflichtmodule
Aus folgenden Modulen müssen Wahlpflichtmodule (davon mindestens ein Modul zur Schulung des methodischen Arbeitens mit einem Code M) im Umfang von insgesamt 30 C erfolgreich absolviert werden:

M.Agr.0148: Policy analysis of international agri-environmental Schemes
M. Agr.0200: Machine Learning in Food Economics and Agribusiness
M.Agr.0201: Dynamic modelling in landuse systems
M.SIA.E05M: Marketing research (6 C, 4 SWS)
M.SIA.E12M: Quantitative Research Methods in Rural Development Economics (6 C, 4 SWS)
M.SIA.E13M: Microeconomic Theory and Quantitative Methods of Agricultural Production (6 C, 4 SWS)
M.SIA.E14: Evaluation of rural development projects and policies (6 C, 4 SWS)
M.SIA.E18: Organization of Food Supply Chains (6 C, 4 SWS)
M.SIA.E21: Rural Sociology (6 C, 4 SWS)
M.SIA.E24: Topics in rural development economics I (6 C, 4 SWS)
M.SIA.E31: Strategic management (6 C, 4 SWS)
~~M.SIA.E33: Responsible and sustainable food business in global contexts (6 C, 4 SWS)~~
M.SIA.E34: Economic valuation of ecosystem services in developing countries (6 C, 4 SWS)
M.SIA.E37: Agricultural policy analysis (6 C, 4 SWS)
M.SIA.E38: Scientific writing in Agricultural Economics (6 C, 4 SWS)
M.SIA.E40: Agriculture, Environment and Development (6 C, 4 SWS)
M.SIA.E47: Sustainable food systems and management (6 C, 4 SWS)
M.SIA.I19M: Participatory research methods for sustainability (6 C, 4 SWS)
M.WIWI-VWL.0008: Development Economics I: Macro Issues in Economic Development (6 C, 4 SWS)

iii) Wahlmodule

Aus folgenden Modulen müssen Wahlmodule im Umfang von insgesamt 36 C erfolgreich absolviert werden. Es können auch die bislang nicht gewählten Wahlpflichtmodule des Studienschwerpunkts gewählt werden:

M.Agr.0106: China economic development: from an agricultural economy to an emerging economy (6 C, 4 SWS)
M.Agr. 0118: Applied Microeconomics (6 C, 4 SWS)
M.Agr. 0151: Data Analysis with R in agricultural economics (6 C, 4 SWS)
M.Agr.0156: Microfinance for the Rural Poor: A Business Class (6 C, 4 SWS)
M.FES.734: Agroforestry Design Course (6 C, 4 SWS)
M.SIA.A07: Unconventional livestock and wildlife-management, utilization and conservation (6 C, 4 SWS)
M.SIA.A08: Socio-ecology in livestock production systems (6 C, 4 SWS)
M.SIA.A11: Tropical animal husbandry systems (6 C, 4 SWS)
M.SIA.A14: Organic livestock farming under temperate conditions (6 C, 4 SWS)
M.SIA.A16: Livestock breeding programs (6 C, 4 SWS)
M.SIA.E02: Agricultural price theory (6 C, 4 SWS)
M.SIA.E06: International organic food markets and marketing (6 C, 4 SWS)
M.SIA.E17M: Management and management accounting (6 C, 4 SWS)
M.SIA.E19: Market integration and price transmission I (6 C, 4 SWS)
M.SIA.E39: Critical and collective perspectives on the global food system
M.SIA.E40: Agriculture, environment and development (6 C, 4 SWS)
M.SIA.E41: EU policies and Organic Agriculture (6 C, 4 SWS)
M.SIA.E42: Agriculture, nutrition and sustainable food systems (6 C, 4 SWS)
M.SIA.E45: Introduction to choice experiments in food economics (6 C, 4SWS)
M.SIA.E46: Food systems governance and agriculture (6 C, 4SWS)
M.SIA.I02: Management of (sub-)tropical landuse systems (6 C, 4 SWS)
~~M.SIA.I03: Food quality and organic food processing (6 C, 4 SWS)~~
M.SIA.I07: International land use systems research - an interdisciplinary study tour (6 C, 8,5 SWS)
M.SIA.I11M: Free Project (6 C)
M.SIA.I14M: GIS and remote sensing in agriculture (6 C, 4 SWS)
M.SIA.I17: Sustainable diets (6 C, 6 SWS)
M.SIA.I20: Agriculture and ecosystem services (6 C, 4 SWS)
M.SIA.I21M: From conceptualisation to communication: key steps in empirical research (6 C, 4 SWS)
M.SIA.I23: Sustainable agricultural practices in Mediterranean regions (6 C, 2 SWS)
M.SIA.I24: Modelling climate impacts on agroecosystems (6 C, 4 SWS)
M.SIA.I31: Sustainable land use and climate mitigation (6 C, 4 SWS)
M.SIA.I33: Food processing (6 C, 4 SWS)
M.SIA.P05: Organic cropping systems under temperate and (sub)tropical conditions (6 C, 4 SWS)
M.SIA.P21: Energetic use of agricultural crops and field forage production
M.SIA.P22: Management of tropical plant production systems (6 C, 4 SWS)
M.SIA.P28: Digitalization in agriculture (6 C, 4 SWS)
M.SIA.P29: Impact of climate extremes on plant production systems around the globe (6 C, 4 SWS)
M.WIWI-VWL.0096: Essentials of global health (6 C, 2 SWS)

bb) International Organic Agriculture

i) Pflichtmodule

Folgendes Brückenmodul M.SIA.P07 und folgende Module im Umfang von insgesamt 30 C müssen erfolgreich absolviert werden:

M.SIA.A14: Organic livestock farming under temperate conditions (6 C, 4 SWS)
M.SIA.I10M: Applied statistical modelling (6 C, 4 SWS)
M.SIA.I12: Sustainable International Agriculture: basic principles and approaches (6 C, 4 SWS)
M.SIA.P05: Organic cropping systems under temperate and (sub)tropical conditions (6 C, 4 SWS)
M.SIA.P07: Soil and plant science (6 C, 4 SWS)

ii) Wahlpflichtmodule

Aus folgenden Modulen müssen vier Module im Umfang von insgesamt 24 C (davon mindestens ein Modul zur Schulung des methodischen Arbeitens mit einem Code M sowie ein ökonomisches Modul mit einem Code E) erfolgreich absolviert werden:

M.Agr.0009: Biological Control and Biodiversity (6 C, 6 SWS)
M.Agr.0056: Plant breeding methodology and genetic resources (6 C, 4 SWS)
M.FES.321: Ecopedology of the tropics and subtropics (6 C, 4 SWS)
M.FES.734: Agroforestry design course (6 C, 4 SWS)
M.SIA.A08: Social-ecology in livestock production systems (6 C, 4 SWS)
M.SIA.A10M: Livestock nutrition and feed evaluation under (sub)tropical conditions (6 C, 4 SWS)
~~M.SIA.A16: Livestock breeding programs (6 C, 4 SWS)~~
M.SIA.A19: Innovative livestock breeding (6 C, 4 SWS)
M.SIA.E06: International organic food markets and marketing (6 C, 4 SWS)
M.SIA.E11: Socioeconomics of Rural Development and Food Security (6 C, 4 SWS)
M.SIA.E21: Rural Sociology (6 C, 4 SWS)
M.SIA.E41: EU policies and Organic Agriculture (6 C, 4 SWS)
~~M.SIA.I03: Food quality and organic food processing (6 C, 4 SWS)~~
M.SIA.I06M: Exercise on the quality of tropical and subtropical products (6 C, 4 SWS)
M.SIA.I14M: GIS and remote sensing in agriculture (6 C, 4 SWS)
M.SIA.I17: Sustainable diets (6 C, 6 SWS)
M.SIA.I19M: Participatory research methods for sustainability (6 C, 4 SWS)
M.SIA.I20: Agriculture and ecosystem services (6 C, 4 SWS)
M.SIA.I30: Organic agriculture in Europe (6 C, 4 SWS)
M.SIA.I31: Sustainable land use and climate mitigation (6 C, 4 SWS)
M.SIA.I32: Biodynamic agriculture (6 C, 4 SWS)
M.SIA.P01: Ecology and agroecosystems (6 C, 4 SWS)
~~M.SIA.P03: Ecological soil microbiology (6 C, 4 SWS)~~
~~M.SIA.P06: Soil and water (6 C, 4 SWS)~~
M.SIA.P13: Agrobiodiversity and plant genetic resources in the tropics (6 C, 4 SWS)
M.SIA.P15M: Methods and advances in plant protection (6 C, 4 SWS)
M.SIA.P16M: Crop modelling for risk management (6 C, 4 SWS)
M.SIA.P20: Plant Nematology (6 C, 4 SWS)
~~M.SIA.P24: Agroforestry (6 C, 4 SWS)~~

iii) Wahlmodule
Aus folgenden Modulen müssen Module im Umfang von insgesamt 36 C erfolgreich absolviert werden. Es können auch die bislang nicht gewählten Wahlpflichtmodule des Studienschwerpunkts gewählt werden.:

M.Agr.0086: World agricultural markets and trade (6 C, 6 SWS)
M.Agr.0148: Policy analysis of international agri-environmental Schemes
M.Agr.0156: Microfinance for the Rural Poor: A Business Class (6 C, 4 SWS)
M.Agr.0174: Plant Health Management in Tropical Crops (6 C, 4 SWS)
M.Agr.0200: Machine learning in food economics and agribusiness (6 C, 4 SWS)
M.Agr.0201: Dynamic modelling in land use systems (6 C, 4 SWS)
M.FES.321: Ecopedology of the Tropics and Subtropics (6 C, 4 SWS)
M.SIA.A02M: Epidemiology of international and tropical animal infectious diseases (6 C, 4 SWS)
M.SIA.A03M: International and tropical food microbiology and hygiene (6 C, 4 SWS)
M.SIA.A04: Livestock reproduction physiology (6 C, 4 SWS)
M.SIA.A07: Unconventional livestock and wildlife-management, utilization and conservation (6 C, 4 SWS)
M.SIA.A11: Tropical animal husbandry systems (6 C, 4 SWS)
M.SIA.A13M: Livestock-based sustainable land use (6 C, 4 SWS)
M.SIA.A15M: Scientific writing in natural sciences (6 C, 4 SWS)
M.SIA.A17: Digitalisation in livestock systems (6 C, 4 SWS)
M.SIA.A18: Grassland-based livestock systems and climate change mitigation (6 C, 4 SWS)
M.SIA.E02: Agricultural price theory (6 C, 4 SWS)
M.SIA.E05M: Marketing research (6 C, 4 SWS)
M.SIA.E12M: Quantitative research methods in rural development economics (6 C, 4 SWS)
M.SIA.E13M: Microeconomic theory and quantitative methods of agricultural production (6 C, 4 SWS)
M.SIA.E14: Evaluation of rural development projects and policies (6 C, 4 SWS)
M.SIA.E17M: Management and management accounting (6 C, 4 SWS)
M.SIA.E18: Organization of Food Supply Chains (6 C, 4 SWS
M.SIA.E24: Topics in Rural Development Economics I (6 C, 4 SWS)
M.SIA.E31: Strategic management (6 C, 4 SWS)

~~M.SIA.E33: Responsible and sustainable food business in global contexts (6 C, 4 SWS)~~
M.SIA.E34: Economic valuation of ecosystem services in developing countries (6 C, 4 SWS)
M.SIA.E36: Institutions and the food system (6 C, 4 SWS)
M.SIA.E37: Agricultural policy analysis (6 C, 4 SWS)
M.SIA.E39: Critical and collective perspectives on the global food system
M.SIA.E42: Agriculture, nutrition and sustainable food systems (6 C, 4 SWS)
M.SIA.E46: Food systems governance and agriculture (6 C, 4SWS)
M.SIA.E47: Sustainable food systems and management (6 C, 4 SWS)
M.SIA.I02: Management of (sub-)tropical landuse systems (6 C)
M.SIA.I06M: Exercise on the quality of tropical and subtropical products (6 C, 4 SWS)
M.SIA.I07: International land use systems research - an interdisciplinary study tour (6 C, 8,5 SWS)
M.SIA.I11M: Free Project (6 C)
M.SIA.I21M: From conceptualisation to communication: key steps in empirical research (6 C, 4 SWS)
M.SIA.I23: Sustainable agricultural practices in Mediterranean regions (6 C, 2 SWS)
M.SIA.I25: Engineering software in agriculture and livestock farming (6 C, 4 SWS)
M.SIA.I28M: Unoccupied aerial vehicle (UAV) applications in agriculture (6 C, 4 SWS)
M.SIA.I29M: Research Methods and Data Science in the Life Sciences (6 C, 4 SWS)
M.SIA.I33: Food processing (6 C, 4 SWS)
M.SIA.P10: Tropical agro-ecosystem functions (6 C, 4 SWS)
M.SIA.P19M: Experimental techniques in tropical agronomy (6 C, 4 SWS)
M.SIA.P21: Energetic use of agricultural crops and field forage production (6 C, 4 SWS)
M.SIA.P22: Management of tropical plant production systems (6 C, 4 SWS)
M.SIA.P27M: Nutrient dynamics, experimental design and statistical modelling - bilingual (6 C, SWS)
M.SIA.P28: Digitalization in agriculture (6 C, 4 SWS)
M.SIA.P29: Impact of climate extremes on plant production systems around the globe (6 C, 4 SWS)
M.SIA.P31: Biochar for environmental management (6 C, 4 SWS)
M.SIA.P32M: Soil-plant interactions (6 C, 4 SWS)
M.SIA.P33M: Water in the soil plant system (6 C, 4 SWS)
M.SIA.P34: Nutrient aquisition by plant (6 C, 4 SWS)
M.WIWI-VWL.0008: Development Economics I: Macro Issues in economic development (6 C, 4 SWS)
M.iPAB.0002: Breeding schemes and programs in plant and animal breeding (6 C, 4 SWS)

cc) Tropical Agricultural and Agroecosystems Sciences

i) Pflichtmodule
Folgendes Brückenmodul M.SIA.P07 und folgende Module im Umfang von insgesamt 30 C müssen erfolgreich absolviert werden:

M.SIA.A11: Tropical animal husbandry systems (6 C, 4 SWS)
M.SIA.I10M: Applied statistical modelling (6 C, 4 SWS)
M.SIA.I12: Sustainable International Agriculture: basic principles and approaches (6 C, 4 SWS)
M.SIA.P07: Soil and plant science (6 C, 4 SWS)
M.SIA.P22: Management of tropical plant production systems (6 C, 4 SWS)

ii) Wahlpflichtmodule
Aus folgenden Modulen müssen Module im Umfang von insgesamt 24 C (davon mindestens ein Modul zur Schulung des methodischen Arbeitens mit einem Code M sowie ein ökonomisches Modul mit einem Code E) erfolgreich absolviert werden:

M.Agr.0180: Mineral nutrition of crops under different climate and environmental conditions
M.FES.321: Ecopedology of the tropics and subtropics (6 C, 4 SWS)
M.FES.734: Agroforestry design course (6 C, 4 SWS)
M.SIA.A04: Livestock reproduction physiology (6 C, 4 SWS)
M.SIA.A10M: Livestock nutrition and feed evaluation under (sub)tropical conditions (6 C, 4 SWS)
M.SIA.A13M: Livestock-based sustainable land use (6 C, 4 SWS)
~~M.SIA.A16: Livestock breeding programs (6 C, 4 SWS)~~
M.SIA.A19: Innovative livestock breeding (6 C, 4 SWS)
M.SIA.E11: Socioeconomics of Rural Development and Food Security (6 C, 4 SWS)
M.SIA.E33: Responsible and sustainable food business in global contexts (6 C, 4 SWS)
M.SIA.E34: Economic valuation of ecosystem services in developing countries (6 C, 4 SWS)
M.SIA.I06M: Exercise on the quality of tropical and subtropical products (6 C, 4 SWS)

M.SIA.I14M: GIS and remote sensing in agriculture (6 C, 4 SWS)
M.SIA.I19M: Participatory research methods for sustainability (6 C, 4 SWS)
M.SIA.I20: Agriculture and ecosystem services (6 C, 4 SWS)
M.SIA.I21M: From conceptualisation to communication: key steps in empirical research (6 C, 4 SWS)
M.SIA.I24: Modelling climate impacts on agroecosystems (6 C, 4 SWS)
M.SIA.I31: Sustainable land use and climate mitigation (6 C, 4 SWS)
M.SIA.P01: Ecology and agroecosystems (6 C, 4 SWS)
M.SIA.P10: Tropical agro-ecosystem functions (6 C, 4 SWS)
M.SIA.P13: Agrobiodiversity and plant genetic resources in the tropics (6 C, 4 SWS)
M.SIA.P16M: Crop Modelling for Risk Management (6 C, 4 SWS)
M.SIA.P19M: Experimental Techniques in Tropical Agronomy (6 C, 4 SWS)
M.SIA.P29: Impact of climate extremes on plant production systems around the globe (6 C, 4 SWS)

iii) Wahlmodule
Aus folgenden Modulen müssen Module im Umfang von insgesamt 36 C erfolgreich absolviert werden. Es können auch die bislang nicht gewählten Wahlpflichtmodule des Studienschwerpunkts gewählt werden.:

M.Agr.0009: Biological control and biodiversity (6 C, 6 SWS)
M.Agr.0056: Plant breeding methodology and genetic resources (6 C, 4 SWS)
M.Agr.0086: World agricultural markets and trade (6 C, 6 SWS)
M.Agr.0148: Policy analysis of international agri-environmental Schemes
M.Agr.0156: Microfinance for the Rural Poor: A Business Class (6 C, 4 SWS)
M.Agr.0174: Plant health management in tropical crops (6 C, 4 SWS)
M.SIA.A02M: Epidemiology of international and tropical animal infectious diseases (6 C, 4 SWS)
M.SIA.A03M: International and tropical food microbiology and hygiene (6 C, 4 SWS)
M.SIA.A07: Unconventional livestock and wildlife-management, utilization and conservation (6 C, 4 SWS)
M.SIA.A08: Socio-ecology in livestock production systems (6 C, 4 SWS)
M.SIA.A14: Organic livestock farming under temperate conditions (6 C, 4 SWS)
M.SIA.A15M: Scientific writing in natural sciences (6 C, 4 SWS)
M.SIA.A18: Grassland-based livestock systems and climate change mitigation (6 C, 4 SWS)
M.SIA.A17: Digitalisation in livestock systems (6 C, 4 SWS)
M.SIA.E02: Agricultural price theory (6 C, 4 SWS)
M.SIA.E05M: Marketing research (6 C, 4 SWS)
M.SIA.E06: International markets and marketing for organic products (6 C, 4 SWS)
M.SIA.E12M: Quantitative research methods in rural development economics (6 C, 4 SWS)
M.SIA.E13M: Microeconomic theory and quantitative methods of agricultural production (6 C, 4 SWS)
M.SIA.E14: Evaluation of rural development projects and policies (6 C, 4 SWS)
M.SIA.E17M: Management and management accounting (6 C, 4 SWS)
M.SIA.E18: Organization of Food Supply Chains (6 C, 4 SWS)
M.SIA.E21: Rural Sociology (6 C, 4 SWS)
M.SIA.E24: Topics in Rural Development Economics I (6 C, 4 SWS)
M.SIA.E31: Strategic management (6 C, 4 SWS)
~~M.SIA.E33: Responsible and sustainable food business in global contexts (6 C, 4 SWS)~~
M.SIA.E34: Economic Valuation of Ecosystem Services (6 C, 4 SWS)
M.SIA.E36: Institutions and the food system (6 C, 4 SWS)
M.SIA.E37: Agricultural policy analysis (6 C, 4 SWS)
M.SIA.E39: Critical and Collective Perspectives on the Global Food System
M.SIA.E41: EU policies and Organic Agriculture (6 C, 4 SWS)
M.SIA.E42: Agriculture, nutrition and sustainable food systems (6 C, 4 SWS)
M.SIA.E46: Food systems governance and agriculture (6 C, 4SWS)
M.SIA.E47: Sustainable food systems and management (6 C, 4 SWS)
M.SIA.I02: Management of (sub-)tropical landuse systems (6 C)
~~M.SIA.I03: Food quality and organic food processing (6 C, 4 SWS)~~
M.SIA.I07: International land use systems research - an interdisciplinary study tour (6 C, 8,5 SWS)
M.SIA.I11M: Free Project (6 C)
M.SIA.I14M: GIS and remote sensing in agriculture (6 C, 4 SWS)
M.SIA.I17: Sustainable diets (6 C, 6 SWS)
M.SIA.I19M: Participatory research methods for sustainability (6 C, 4 SWS)
M.SIA.I23: Sustainable agricultural practices in Mediterranean regions (6 C, 2 SWS)
M.SIA.I25: Engineering software in agriculture and livestock farming (6 C, 4 SWS)

M.SIA.I26: Wastewater treatment for agricultural reuse (6 C, 4 SWS)
M.SIA.I27: Postharvest Technology (6 C, 4 SWS)
M.SIA.I28M: Unoccupied aerial vehicle (UAV) applications in agriculture (6 C, 4 SWS)
M.SIA.I29M: Research Methods and Data Science in the Life Sciences (6 C, 4 SWS)
M.SIA.I30: Organic agriculture in Europe (6 C, 4 SWS)
M.SIA.I32: Biodynamic agriculture (6 C, 4 SWS)
M.SIA.I33: Food processing (6 C, 4 SWS)
~~M.SIA.P03: Ecological soil microbiology (6 C, 4 SWS)~~
M.SIA.P05: Organic cropping systems under temperate and (sub)tropical conditions (6 C, 4 SWS)
~~M.SIA.P06: Soil and water (6 C, 4 SWS)~~
M.SIA.P15M: Methods and advances in plant protection (6 C, 4 SWS)
M.SIA.P20: Plant Nematology (6 C, 4 SWS)
M.SIA.P21: Energetic use of agricultural crops and field forage production (6 C, 4 SWS)
M.SIA.P27M: Nutrient dynamics, experimental design and statistical modelling - bilingual (6 C, 4 SWS)
M.SIA.P28: Digitalization in agriculture (6 C, 4 SWS)
M.SIA.P31: Biochar for environmental management (6 C, 4 SWS)
M.SIA.P32M: Soil-plant interactions (6 C, 4 SWS)
M.SIA.P33M: Water in the soil plant system (6 C, 4 SWS)
M.SIA.P34: Nutrient aquisition by plant (6 C, 4 SWS)
M.WIWI-VWL.0008: Development Economics I: Macro issues in economic development (6 C, 4 SWS)
M.iPAB.0002: Breeding schemes and programs in plant and animal breeding (6 C, 4 SWS)

b) Masterarbeit
Durch die erfolgreiche Anfertigung der Masterarbeit werden 24 C erworben.

c) Kolloquium zur Masterarbeit
Durch das erfolgreiche Absolvieren des Kolloquiums zur Master-Arbeit werden 6 C erworben.

2. Das Modulhandbuch wird um folgende Modulbeschreibungen ergänzt:

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **M. SIA.A18: Grassland-based livestock systems and climate change mitigation**	6 C 4 SWS
Learning outcome, core skills: This course is divided into two sub-modules consisting of 3 credits each. Sub-module A has the following objectives: (i) to learn fundamental relationships between livestock management and forage value of grasslands; (ii) to learn about factors affecting animal performance and animal health; (iii) to become familiar with scientific approaches in animal science and grassland-based systems. In Sub-module B, you will: (i) understand the basics of greenhouse gas (GHG) emissions and climate change related to livestock; (ii) become familiar with key international climate conventions and agreements; (iii) get acquainted with the methodological approaches used for collecting data and calculating GHG emission from grassland-based livestock systems; (iv) become familiar with policies and mitigation measures for decreasing emissions in these systems.	**Weekly lecture hours in total for each sub-module:** Attendance time per sub-module: 30 h Self-study time: 60 h
Course contents: Sub-module A: Grasslands play a vital role for biodiversity and the climate. Grazing on grasslands has a long tradition in livestock farming and production of high-quality animal products. Today´s generations of livestock farmers face increasing challenges because of climate change, invasive plant species, modern animal genetics with high energy and nutrient requirements, and other factors. This sub-module will focus on these challenges from a farmer and animal perspective, looking at various grassland management practices that promote biodiversity and ensure animal health and the production of high-	

quality livestock products. Participants will learn to differentiate between feed qualities and recognize their effects on animal performance and product quality. Lectures will provide knowledge about selective plants and plant biodiversity in relation to animal health and product quality. The effects of grazing on forage quality and *vice versa* will be discussed and additional factors such as climate change and plant diversity will be considered. Sub-module B: Reducing GHG emissions is paramount to combat climate change globally. Grassland-based livestock systems contribute to climate change but are also affected by it, which means that livestock in these systems can be part of the solution. This sub-module is designed to provide participants with an introduction to the topic of GHG emissions from livestock in grassland-based systems. Key international climate conventions (e.g., the Paris Agreement) and other international commitments envisaged to combat climate change will be discussed. We will explore both qualitative and quantitative aspects needed for understanding, quantifying and mitigating GHG emissions from grassland-based livestock systems. The sub-module will also present different policies and measures (e.g., carbon credits and tax incentives) that can be considered to support a decrease in GHG emissions from livestock in grassland-based systems. The lectures for each sub-module are given by researchers from FB11 at Uni Kassel and invited speakers. In the seminar part, students give a presentation on a topic from this course. Guest lecturers from international research institutions and the private sector will be invited for both sub-modules. Lecture slides will be provided for each lecture alongside further literature for self-study.	
Examination: Presentation in either sub-module A or B (ca. 20 min) 50 % + an oral exam in the corresponding other sub-module (ca. 15 min) 50 %	
Examination prerequisites for both sub-modules: Regular attendance of lectures and exercises, as well as presentation of a seminar talk.	

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge (B.Sc. level) of plant and animal sciences
Language: English	**Person responsible for module:** Prof. Dr. Fenja Klevenhusen
Course frequency: Annually, SoSe (summer term); Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:** 1 – 3
Maximum number of students: 20	
Additional notes and regulations: None	

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.A19 Innovative livestock breeding**	6 C 4 SWS
Learning outcome, core skills:	**Weekly lecture**

After taking the course "Sustainable Breeding Innovations: Shaping the Future of Livestock Production" module students • Understand the complex challenges facing global livestock production, including societal expectations, environmental sustainability, and efficient resource management. • Are able to explore and critically evaluate innovative breeding strategies that contribute to sustainable agricultural practices. • Gain practical insights into strategic breeding through interactive learning methods such as lectures, seminars, group discussions, and field trips (if feasible). • Design a sustainable livestock breeding program that addresses real-world issues, demonstrating an ability to integrate economic viability with social acceptability, animal welfare and environmental health. • Contribute meaningfully to policy discussions or practical interventions aimed at promoting sustainability within the livestock sector.	**hours in total:** Attendance time: 60 h Self-study time: 120 h
Course contents: In recent years, the paradigm has shifted from prioritizing animal productivity to embracing a more holistic approach in livestock breeding programs that includes animal health, environmental impact, and resource efficiency alongside with economic and production aspects. This course aims to provide students with a comprehensive understanding of these changes and to explore breeding strategies that align with contemporary societal values and international best practices. Students will engage with topics including: 1. Societal expectations and livestock production: Understanding how consumer preferences and societal norms are reshaping livestock breeding objectives. 2. Sustainable breeding practices: Exploring strategies that balance productivity with animal health, environmental sustainability, and resource efficiency. 3. Genetic diversity management: Examining the importance of preserving breed diversity as a cultural heritage and as an investment in future resilience to stresses such as zoonotic disease outbreaks and global warming. 4. Ethical breeding approaches: Investigating ethical considerations in breeding practices that respect animal welfare while meeting farmers' production goals and societal norms. 5. Policy implications: Assessing the role of policy in guiding sustainable breeding practices and protecting genetic diversity. Students will develop skills to critically analyze and synthesize literature related to livestock breeding challenges and opportunities, elaborate exemplary breeding approaches for diverse environmental and societal goals, learn to effectively communicate scientific research findings and propose solutions to stakeholders. Methods: Interactive lectures, student seminars, group discussions, field trips to farms or research institutions (if feasible)	
Examination: Written exam (90 minutes, 70%) and individual assignment (30%): either written project report (ca. 15 pages) or oral presentation (20 minutes).	
Examination requirements:	

Know contemporary challenges of livestock production and societal expectations; ability to evaluate and discuss sustainable and ethical breeding practices; understand the role of genetic diversity management; conclude on policy implications arising from the aforementioned aspects.	
Admission requirements: none	**Recommended previous knowledge:** Basic knowledge of animal sciences and animal breeding
Language: English	**Person responsible for module:** PD Dr. Regina Rößler
Course frequency: Annually, SoSe (summer term); Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:** -
Maximum number of students: 15	
Additional notes and regulations: Literature will be provided to prepare for the lectures and students' assignments / seminars.	

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.E46 Food systems governance and agriculture**	6 C 4 SWS
Learning outcome, core skills: Students • will understand the food system concept and the role of governance and institutions within it against the background of the European Union, and its role for and interactions with diverse production systems worldwide • will obtain an overview of the ways in which the many European food systems and demands for agricultural produce shape local agriculture and rural areas in Europe and worldwide • will obtain an overview of the role of policies, governance arrangements and institutions for the way Europe shapes global food systems and agriculture • will become familiar with a public choice and institutionalist perspective on public policy making • will become familiar with a constitutional, new institutional economic and a critical institutionalist perspective on food system interactions and their change • will reflect on the concepts of the course throughout seminar discussions • will explore analytical tools throughout issue-related discussions with practice partners.	**Weekly lecture hours in total:** Attendance time: 60 h Self-study time: 120 h
Course: *Contents:* Agricultural production is nowadays conceived as integral part of global food, feed, fuel, and fibre-related supply systems. The European Union plays a major role in structuring global agriculture, food and supply systems. Policies structuring governance and institutions are core elements shaping economic exchange in the food system and the exploitation of natural resources. The course covers what food and agricultural systems are, what roles policies, governance and institutions play in these, and how the European Union's	

structure of agricultural production shapes them. To explain policy outcomes, the course relies on a public choice and institutionalist perspective. For analyzing the food system, it further introduces new and critical institutionalist approaches and collective action theory, and illustrates these through case materials and literature discussions. Analytical perspectives will further be explored through the discussion of various European governance issues with practice partners and policy makers. Methods: Lecture, seminar, group works, virtual and in presence stakeholder meetings and potentially short excursions, presentations, readings, presentations (learning through teaching)	
Examination: Five literature discussions or responses to set questions (graded) 40%; Oral presentation (student-led seminar) (20 minutes) or oral examination (25min) or written term paper (2500 words) 60%; or working report (max. 2500 words) 100%	
Examination requirements: Throughout term students discuss particular literatures or questions in relation to ongoing course contents in class or at home and submit these short answers in writing, Up to 10 opportunities to submit such work exist. Best 5 graded answers will enter final grading with 40% weight. For 60% of marking students have the choice between overall oral examination (25 minutes), oral seminar-style presentation in relation to a topic related to the course contents and agreed with lecturer (20 minutes presentation per person involved) and term paper on a topic related to the course contents and agreed with lecturer (2500 words (graded) including 10 minutes discussion of the paper) – introductory literatures on term paper topic and presentation would be provided	

Admission requirements: n/a	**Recommended previous knowledge:** Social sciences and economics of agricultural and rural development
Language: English English	**Person responsible for module:** Prof. Dr. Andreas Thiel
Course frequency: Annually, Winter term; Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	
Additional notes and regulations: **Literature:** Literature and seminar papers will be circulated to students at the be ginning of term	

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.E47 Sustainable food systems and management**	6 C 4 SWS
Learning outcome, core skills: The students - can describe and ethically reflect on the social role(s) of companies and other actors in the agriculture and food sector and their social responsibility and accountability to society. - can explain definitions, concepts and theories that are important for sustainable management and interaction with stakeholders in the agriculture and food sector and are aware of the associated strengths, weaknesses and uncertainties.	**Weekly lecture hours in total:** Attendance time: 60 h Self-study

- can use their knowledge of management systems and approaches as well as systems for sustainability assessment and communication to select and apply suitable instruments for the respective needs and analyse and discuss examples of entrepreneurial action. - can differentiate and discuss the different perspectives with which sustainable food systems and socially responsible corporate behaviour are understood.	time: 120 h
Course: Lecture, Seminar *Contents:* - Sustainability challenges in the global food system; history and status quo of CSR and sustainable development - Different stakeholder views on responsibility and sustainability (NGO'S, government, employees, investors…) - Voluntary and mandatory approaches to addressing responsibility and sustainability challenges in the food system - Contemporary research and practice examples	
Examination: Oral presentation (ca. 15min) including 400-800 words exposé 40%, written assignment (ca. 8000 words) 60%	
Examination requirements: Knowing sustainability challenges in the global food system, stakeholder views on responsibility and sustainability and approaches to addressing responsibility and sustainability challenges in the food system	

Admission requirements: none	**Recommended previous knowledge:**
Language: English	**Person responsible for module:** Prof. Dr. Bettina König
Course frequency: Annually, WiSe (winter term); Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 35	

Additional notes and regulations:

Literature:

Hahn, R. (2022). Sustainability Management: Global Perspectives on Concepts, Instruments, and Stakeholders. Germany: Rüdiger Hahn.

Rasche, A., Morsing, M., & Moon, J. (Eds.). (2017). Corporate Social Responsibility: Strategy, Communication, Governance. Cambridge University Press.

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.I31 Sustainable land-use and climate mitigation**	6 C 4 SWS
Learning outcome, core skills: Upon successful completion of the module students • will be able to understand key scientific concepts around climate change and its mitigation. • have deep knowledge on land-based mitigation options, their potentials, interplays and side-effects • will understand the scientific principles of the interplay between climate mitigation and other sustainable development targets • will be able to develop interdisciplinary and holistic viewpoints on sustainable land management including land-based mitigation • will obtain an overview of models used to assess mitigation pathways	**Weekly lecture hours in total:** Attendance time: 60 h Self-study time: 120 h

• will be able to understand land-use models and Integrated Assessment Models that are used to derive future pathways • will become familiar with international assessment bodies such as IPCC or IPBES • develop critical thinking of the scenarios used in international assessments such as IPCC and IPBES • will explore analytical tools such as scenario explorers and land-use models • will reflect on the concepts of the course throughout seminar presentations and discussions	
Course: *Contents:* Land-based climate mitigation measures have gained significant attention and importance in public and private sector climate policies. To start with, this course provides an overview on climate change and its mitigation in general, focusing on the land-use sector. It will highlight the contributions of land use to as well as its potentials for mitigating climate change. Hereby, the course will help to increase the understanding of the needs, opportunities, potentials, interplays of different land-based mitigation options as well as their interaction with other sustainable development targets such as biodiversity protection. The course continues introducing international assessment bodies such as IPCC and IPBES being one of the major scientific basis of public and private sector decision making. Moreover, the scenarios as well as the tools applied for developing these scenarios will be assessed and discussed. Students then work on selected current topics of Land-Based Climate Mitigation from different perspectives which are accompanied by the lecturers. At the end of the semester, all students present their outcomes. Part of the module will take place at the Potsdam Institute of Climate change.	
Examination: Oral presentation (15min) 40% and oral exam (15min) 60%	
Examination requirements: Presentation - appropriate according to the standard of international conferences: relevant and sound content, clear structure, style, language (written and spoken) and pronunciation, citation and use of sources according to good scientific practice. Oral exam – The exam will ask knowledge and transfer questions related to the lecture content (i.e. climate change and mitigation, land-based mitigation options (potentials, sustainability dimension), land-use and IAM models, scenarios, international assessments such as IPCC, IPBES).	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexander Popp
Course frequency: Annually, SoSe (summer term); Witzenhausen/Potsdam	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Additional notes and regulations: **Literature:** Leimbach, M., et al. (2011): Integrated assessment models -the interplay of climate change, agriculture, and land use in a policy tool. In: Dinar, A., Mendelsohn, R. (eds.): Handbook on Climate Change in Agriculture. Edward Elgar, Cheltenham, UK. (Chapter 10) Dietrich, J. et al (2019): MAgPIE 4 -A modular open source framework for modeling global land-systems. Geoscientific Model Development. 12, 1299-1317. Pörtner, H.O., et al (2021) IPBES-IPCC co-sponsored workshop report on biodiversity and climate change; IPBES and IPCC. DOI:10.5281/zenodo.4782538. IPCC, 2019: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, et al, (eds.)].

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.I32 Biodynamic agriculture**	6 C 4 SWS
Learning outcome, core skills: Learn to know basic principles of biodynamic agriculture (in Germany and worldwide), critical discussion of practical examples and scientific studies on the topic, as well as insight into practice on a biodynamic farm and into research work on the issue**.**	**Weekly lecture hours in total:** Attendance time: 60 h Self-study time: 120 h
Course: Introduction to the basics of biodynamic agriculture with practical examples from Germany and around the world. The areas of animal husbandry, plant breeding and product quality as well as the underlying principles of biodynamic agriculture will be discussed. With a focus also on scientific studies on the subject and current concepts like one health. The course includes a 3-day excursion to a biodynamic farm and a research institution.	
Examination: Presentation (approx. 30 min.) 50% and oral exam (approx. 30 min.) 50% **Examination requirements:** Good knowledge about biodynamic agriculture and practical examples	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Daniel Kusche
Course frequency: Annually, summer term; Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 16	
Additional notes and regulations: **Literature:** Brock et al. (2019): Research in biodynamic food and farming – a review. Open Agriculture https://doi.org/10.1515/opag-2019-0064	

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.I33 Food Processing**	6 C 4 SWS
Learning outcome, core skills: Students can: - Describe the basic processes and systems of food processing - Derive quality-relevant steps, raw material and product properties - Discuss the differences between industrial and artisanal production - Classify the production of food in the wider context of sustainable development	**Weekly lecture hours in total:** Attendance time: 60 h Self-study time: 120 h
Course: Food Processing (Lecture, Seminar) *Contents:* Students gain in-depth knowledge of the production of the most important food product groups and the chemical reactions that take place. Furthermore, a principle knowledge of analytical methods for quality and authenticity testing of these product groups will be provided. Animal foodstuffs: milk and dairy products; eggs and egg products; meat and meat products; fish and fish products. Plant foods: vegetable fats and oils; fruit and fruit products; vegetables and vegetable products; Legumes; cereals and cereal products; sugar, cocoa and chocolate; coffee and tea; Alcoholic beverages: beer, wine and spirits Flavors and spices	
Examination: Written (90 min) or oral (20 min) examination depending on number of participants	
Examination requirements: basic processes and systems of food processing, quality of processing and products, industrial and artisanal production	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Fabian Weber
Course frequency: Annually, WiSe (winter term); Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:** 1
Maximum number of students: Not limited	
Additional notes and regulations: Seminars include research-based learning elements such as case studies and research activities involving students giving short presentations	

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.P32M Soil-plant interactions**	6 C 4 SWS
Learning outcome, core skills: Students will conduct a small research project related to an agricultural topic and learn the relevant involved steps of the process. Students proof that they are capable of • Identifying a research question and developing a testable hypothesis	**Weekly lecture hours in total:** Attendance time: 60 h

• Collaborate in groups to brainstorm, guide the discussion towards a practically implementable outcome, and implement the experiment • Analyse, interpret and discuss the experimental results	Self-study time: 120 h
Course: Soil-plant interactions Lecture 8h, Seminar 12h, Laboratory 40h *Contents:* Introduction to and application of relevant up-to-date methods in plant-soil interactions in response to abiotic stress The complete operational sequence of a research project is simulated: • sampling • sample preparation, • measurements and data collection (application of methods) • data processing • statistics and • drafting a manuscript. Up-to-date literature is presented and discussed by the students.	
Examination: Work report (approx. 15 p) 50%, Project presentation (app. 20 min) 50%	
Examination requirements: Short paper describing the set-up (incl. justification) and execution of the experiment as well as discussion of the results. Presentation of the approach, results and limitations/lessons learned.	

Admission requirements: -	**Recommended previous knowledge:** -
Language: English	**Person responsible for module:** Prof. Dr. J. Simon
Course frequency: Annually, winter term; Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:** -
Maximum number of students: 15	
Additional notes and regulations: **Literature:** Parker R. 2009: Plant & Soil Science: Fundamentals & Applications (Editor: Delmar) Literature will be provided in the framework of the course	

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **Modul M.SIA.P33M Water in the soil plant-system**	6 C 4 SWS
Learning outcome, core skills: Students will be able to understand and model energy, water and nutrient flows in the soil-plant-atmosphere system. The main focus is on methods for working with models	**Weekly lecture hours in total:** Attendance time: 60 h Self-study time: 120 h

Course: The course focuses on the basic methods for working with process models. physical processes in the soil-plant-atmosphere system. The course consists of roughly equal parts lecture content and computer-based exercises. In the lecture part, the most important concepts for modeling the relevant soil and plant growth processes are explained, and in a second part, a detailed introduction to the agroecosystem simulation model Expert-N is given. Computer exercises are carried out in which students perform simulations on the following topics: - Water flow in agroecosystems - Water extraction and distribution, surface irrigation, sprinkler irrigation, drip irrigation - Carbon and nitrogen turnover in soils - Plant growth and crop yield - Climate change and crop production	
Examination: oral (approx 25 min)	
Examination requirements: Knowledge of energy, water and nutrient flows in the soil-plant-atmosphere system. Ability to understand and use models.	

Admission requirements: non	**Recommended previous knowledge:** Modul Soil and plant science or equivalent,
Language: English	**Person responsible for module:** Prof. Dr. Tobias Weber
Course frequency: Annually, SoSe (summer term); Witzenhausen	**Duration:** 1 Semester
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 12	

Additional notes and regulations:

Literature:

Reichardt, Klaus; Timm, Luis Carlos (2020): Soil plant and atmosphere. Concepts, Processes and applications. Springer.

Tomei, Fausto (researcher Regional Agency For Environmenta (2015):Soil physics with python - transport in the soil-plant-atmosphere system: Oxford University Press.

Moene, Arnold F.; van Dam, Jos C. (2014): Transport in the Atmosphere-Vegetation-Soil Continuum: Cambridge University Press.

Georg-August-Universität Göttingen Universität Kassel/Witzenhausen **M.SIA.P34 Nutrient acquisition by plants**	6 C 4 SWS
Learning outcome, core skills: Students obtain a more detailed knowledge on how nutrients, especially nitrogen and phosphorus, are acquired by plants.	**Weekly lecture hours in total:** Attendance time: 60 h Self-study time: 120 h

Course: *Contents:* Topics include e.g. different mechanism of plants to acquire nitrogen, phosphorus (e.g. prior/after mineralization processes, via support by bacteria & fungi), and also micronutrients, competition for nutrients between plants and soil microbes, rhizodeposition, dependence on abiotic factors, influence of invasive species. Other skills: Presenting a lecture on a specific topic Moderating a discussion Scientific writing of a mini-review (incl. literature search, citing correctly)		
Examination: 60% oral presentation (30min) plus leading the following discussion, 40% mini-review (c. 20 pages)		
Examination requirements: Knowledge on how nutrients, especially nitrogen and phosphorus, are acquired by plants		
Admission requirements: none	**Recommended previous knowledge:**	
Language: English	**Person responsible for module:** Prof. Dr. Judy Simon	
Course frequency: Annually, SoSe (summer term); Witzenhausen	**Duration:** 1 Semester	
Number of repeat examinations permitted: twice	**Recommended semester:**	
Maximum number of students: 24		
Additional notes and regulations: **Literature:** Some general literature will be provided in the framework of the course. For the specific oral presentations, literature search is conducted by the students.		

Artikel 2 Übergangs- und Schlussbestimmungen

Studierende, die vor Inkrafttreten dieser Änderungsordnung ihr Studium begonnen haben, werden auf Antrag nach dieser Änderungsordnung geprüft.

Artikel 3 In-Kraft-Treten

Diese Änderungsordnung tritt nach ihrer Bekanntmachung in den Amtlichen Mitteilungen der Universität Göttingen und im Mitteilungsblatt der Universität Kassel in Kraft.

Witzenhausen, den

Die Dekanin des Fachbereichs Ökologische Agrarwissenschaften

Prof. Dr. Maria Finckh