Georg-August-Universität
Göttingen

Directory of Modules

für den Promotionsstudiengang für Agrarwissenschaften (PAG) - zu der Promotionsordnung für die Graduiertenschule Forst- und Agrarwissenschaften (GFA) (Amtliche Mitteilungen I Nr. 47/2015, S. 1402, zuletzt geändert durch Amtliche Mitteilungen I Nr. 8/2022 S. 118)

Modules

Index by areas of study

I. Module directory for the PhD program PAG

Im Rahmen des Promotionsstudiums müssen Leistungen im Umfang von insgesamt wenigstens 20 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden. Doktorandinnen und Doktoranden können eines der programmgebundenen Curricula nach Nrn. 1. bis 9. auswählen; die Teilnahme am Curriculum eines Kollegs oder Programms nach Nrn. 3. bis 9. erfordert eine besondere Zulassung nach den Bestimmungen des jeweiligen Promotionsprogramms.

Within the field of the PhD studies at least 20 C must be succesfully completed according to the following regulations. PhD students can choose one of the program-bound curricula from Nos. 1. to 9.; the participation in one of the curricula from Nos. 3. to 9. requires a specific admission according to the respective PhD-program.

1. PhD program for Agricultural Sciences in Goettingen

Es müssen Module im Umfang von insgesamt wenigstens 24 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 24 C must be succesfully completed according to the following regulations.

a. Fachstudium / Professional studies

Es müssen Module im Umfang von insgesamt wenigstens 18 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 18 C must be succesfully completed according to the following regulations.

aa. Fortschrittsberichte / Progress reports

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden:

One of the following mandatory modules worth at least 6 C must be successfully completed:

bb. Methods

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt.

One out of the following modules amounting to 6 credits must be fulfilled successfully. After having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”.

cc. Professional knowledge

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt.

One out of the following modules amounting to 6 credits must be fulfilled successfully. After having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”.

b. Key competencies

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt. Module im Umfang von insgesamt 6 C aus dem Angebot der GFA im Bereich Schlüsselkompetenzen sind ebenfalls zulässig.

One out of the following modules amounting to 6 credits must be fulfilled successfully. After having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”. Modules worth overall 6 C can also be chosen from the key competence courses offered by the University of Goettingen.

2. IPAG - International Ph.D. Program for Agricultural Sciences in Göttingen

Es müssen Module im Umfang von insgesamt wenigstens 24 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 24 C must be succesfully completed according to the following regulations.

a. Professional studies

Es müssen Module im Umfang von insgesamt wenigstens 18 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 18 C must be succesfully completed according to the following regulations.

aa. Progress reports

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden:

One of the following mandatory modules worth at least 6 C must be successfully completed:

bb. Methods

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt.

One out of the following modules amounting to 6 credits must be fulfilled successfully. After

having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”.

cc. Professional knowledge

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt.

One out of the following modules amounting to 6 credits must be fulfilled successfully. After having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”.

b. Professional knowledge

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 6 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt. Module im Umfang von insgesamt 6 C aus dem Angebot der GFA im Bereich Schlüsselkompetenzen sind ebenfalls zulässig.

One out of the following modules amounting to 6 credits must be fulfilled successfully. After having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”. Modules worth overall 6 C can also be chosen from the key competence courses offered by the university of Goettingen.

3. Research Training Group 1666 Global Food

Doktorandinnen und Doktoranden, die im Rahmen des Graduiertenkollegs 1666 "GlobalFood" promovieren, müssen Module im Umfang von insgesamt wenigstens 30 C nach Maßgabe der folgenden Bestimmungen erfolgreich absolvieren.

At least 30 C must be succesfully completed according to the following regulations.

a. Professional studies

Es müssen Module im Umfang von insgesamt 24 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 24 C must be succesfully completed according to the following regulations.

aa. Academic core skills und interdisciplinarity

Es müssen folgende Module (Compulsory modules) im Umfang von insgesamt 18 C erfolgreich absolviert werden.

The following 4 compulsory modules worth overall 18 C must be succefully completed.

bb. Professional and methodical focus

Es müssen zwei der folgenden Wahlpflichtmodule im Umfang von insgesamt 6 C erfolgreich absolviert werden.

Out of the following mandatory modules two modules worth overall at least 6 C must be successfully completed.

b. Key competencies

Es sind wenigstens 6 C aus folgendem Modulangebot (Soft Skill Electives) zu absolvieren.

Out of the following modules at least 6 C must be successfully completed.

4. Postgraduate Research Group Agricultural Economics

Es müssen Leistungen im Umfang von insgesamt wenigstens 30 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich erbracht werden. Für Module, die an beteiligten Partnerhochschulen absolviert werden, gelten die dort jeweils gültigen prüfungsrechtlichen Bestimmungen.

At least 30 C must be succesfully completed according to the following regulations.

a. Professional studies

Es müssen Module im Umfang von insgesamt wenigstens 24 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 24 C must be succesfully completed according to the following regulations.

aa. Methodical-theoretical courses

Es müssen Module im Umfang von insgesamt wenigstens 18 C erfolgreich absolviert werden, die dem nachfolgenden Angabot oder dem Angebot der beteiligten Partnerhochschulen entnommen werden können. Aus den Bereichen "Theorie" und "Empirie" sind Angebote im Umfang von jeweils (mindestens) 6 C zu wählen.

Modules with overall at least 18 C out of the following offer (of which at least one module with at least 6 C from "Theory" and at least one module with at least 6 C from "Empiricism" must be succefully completed) or from a partner univeristy must be succesfully completed.

i. Theorie (T) / Theory (T)

Aus dem Bereich "Theorie" sind Angebote im Umfang von (mindestens) 6 C zu wählen.

At least 6 C must be succesfully completed from the field "Theory".

ii. Empiricism (E)

Aus dem Bereich "Empirie" sind Angebote im Umfang von (mindestens) 6 C zu wählen.

At least 6 C must be succesfully completed from the field "Empiricism".

iii. Focus areas (S)

Aus dem Bereich „Schwerpunktthema“ sind Angebote im Umfang von (mindestens) 6 C zu wählen. Alternativ können weitere Module aus dem Bereich Theorie (T) oder Empirie (E) gewählt werden.

Within the Focus areas (S) modules worth overall at least 6 C must be successfully completed. Alternatively, other modules from the fields "Theory (T)" and/or "Empiricism (E)" can be chosen.

bb. Colloquia

Aus dem Bereich „Kolloquia“ sind Angebote von (mindestens) 6 C zu wählen. Weitere Module des Bereichs „Kolloquia“ können dem fächerübergreifenden Lehrangebot der beteiligten

Partneruniversitäten entnommen und im Einzelverfahren durch den Graduiertenausschuss anerkannt werden.

From the field "colloquia" modules worth at least 6 C must be completed. Further modules from this field can be chosen from the involved universities and must be accepted by the examining board.

b. Soft Skills / Key competencies

Es sind wenigstens 6 C aus folgendem Modulangebot zu absolvieren. Weitere Module des Bereichs „Soft Skills“ können dem Lehrangebot der beteiligten Partneruniversitäten entnommen und im Einzelverfahren durch den Graduiertenausschuss anerkannt werden.

At least 6 C must be succesfully completed according to the following regulations. Further modules from the the field "Key competencies" can be chosen from the involved universities and must be accepted by the examining board.

5. Research Training Group 1644 Scaling Problems in Statistics

Doktorandinnen und Doktoranden, die im Rahmen des Graduiertenkollegs 1644 "Skalenprobleme in der Statistik" promovieren, müssen Module im Umfang von insgesamt wenigstens 29 C nach Maßgabe der folgenden Bestimmungen erfolgreich absolvieren.

At least 29 C must be succesfully completed according to the following regulations.

a. Professional studies

Es müssen Module im Umfang von insgesamt wenigstens 25 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 25 C must be succesfully completed according to the following regulations.

aa. Statistical methods

i. Compulsory modules

Folgendes Pflichtmodul muss absolviert werden:

The following module must be completed:

ii. Mandatory modules

Es muss eines der folgenden Wahlpflichtmodule im Umfang von 4 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt.

One of the following mandatory modules worth 4 C must be successfully completed. After having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”.

bb. Professional specialization

Es müssen Module im Umfang von 3 C erfolgreich absolviert werden. Module des Bereichs "Fachliche Spezialisierung" können mit Zustimmung des Graduiertenausschusses aus dem fachspezifischen Lehrangebot der beteiligten Fakultäten der Universität entnommen werden. Der Graduiertenausschuss veröffentlicht eine Liste von Modulen, für die die Zustimmung nach Satz 2 als erteilt gilt.

At least 3 C must be succesfully completed according to the following regulations. Further modules from the the field "Professional specialization" can be chosen from the involved universities and must be accepted by the examining board.

cc. Research seminars and colloquia from GRK 1644

Folgendes Modul muss absolviert werden:

The following module must be completed:

dd. Summer schools and conferences from GRK 1644

Folgendes Modul muss absolviert werden:

The following module must be completed:

b. Key competencies

Es müssen insgesamt wenigstens 4 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 4 C must be succesfully completed according to the following regulations.

aa. Compulsory modules

Es muss folgendes Modul erfolgreich absolviert werden:

The following modules must be completed.

bb. Mandatory modules

Es müssen Module im Umfang von mindestens 2 C erbracht werden. Dafür können mit Zustimmung des Graduiertenausschusses Module aus dem fächerübergreifenden Lehrangebot der Universität entnommen werden. Der Graduiertenausschuss veröffentlicht eine Liste von Modulen, für die die Zustimmung nach Satz 2 als erteilt gilt.

Modules worth at least 2 C must be succesfully completed according to the following regulations. Modules can be chosen from the involved universities and must be accepted by the examining board.

6. Postgraduate Research Group Qualificational Upgrading in KMU

Es müssen Module im Umfang von insgesamt wenigstens 26 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 26 C must be succesfully completed according to the following regulations.

a. Professional studies

Es müssen Module im Umfang von insgesamt wenigstens 19 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 19 C must be succesfully completed according to the following regulations.

aa. Compulsory modules

Es müssen folgende zwei Module im Umfang von insgesamt 15 C erfolgreich absolviert werden.

The following two modules worth 15 C must be successfully completed.

bb. Elective modules

Es müssen Module im Umfang von insgesamt wenigstens 4 C erfolgreich absolviert werden; neben dem im Folgenden genannten Modul können im Einvernehmen mit dem Betreuungsausschuss Module der am Kolleg inhaltlich beteiligten wissenschaftlichen Einrichtungen, der Zentralen Einrichtung für Sprachen und Schlüsselqualifikationen oder der Hans-Böckler-Stiftung aus den Bereichen interdisziplinäre Methoden, Schlüsselkompetenzen und berufsbezogene Kompetenzen absolviert werden.

At least 4 C must be successfully completed according to the following regulations. Further modules form the ZESS, Hans-Böckler-Stiftung (from the field "Interdisciplinary methods" or "Key competencies" or "Occupational core skills") or the involved scientific facilities can be chosen and must be accepted by the thesis committee.

b. Key competencies

Es müssen Module im Umfang von insgesamt wenigstens 7 C erfolgreich absolviert werden. Es können Module im Einvernehmen mit dem Betreuungsausschuss der am Kolleg inhaltlich beteiligten wissenschaftlichen Einrichtungen, der Zentralen Einrichtung für Sprachen und Schlüsselqualifikationen oder der Hans-Böckler-Stiftung aus den Bereichen interdisziplinäre Methoden, Schlüsselkompetenzen und berufsbezogene Kompetenzen absolviert werden.

At least 7 C must be successfully completed according to the following regulations. Further modules form the ZESS, Hans-Böckler-Stiftung (from the field "Interdisciplinary methods" or "Key competencies" or "Occupational core skills") or the involved scientific facilities can be chosen and must be accepted by the thesis committee.

7. Animal Welfare in Intensive Livestock Production Systems

Es müssen Leistungen im Umfang von insgesamt wenigstens 24 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich erbracht werden.

At least 24 C must be succesfully completed according to the following regulations.

a. Professional studies

Es müssen Module im Umfang von insgesamt wenigstens 18 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 18 C must be succesfully completed according to the following regulations.

aa. Compulsory modules

Es müssen folgende Module im Umfang von insgesamt 18 C erfolgreich absolviert werden.

The following modules worth overall 18 C must be successfully completed.

b. Key competencies

Es müssen insgesamt wenigstens 6 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich absolviert werden.

At least 6 C must be succesfully completed according to the following regulations.

aa. Mandatory modules

Es muss eines der folgenden Wahlpflichtmodule im Umfang von mindestens 2 C erfolgreich absolviert werden. Nach Anmeldung für das Modul ist die Anmeldung für ein weiteres der nachfolgenden Module erst zulässig, sofern das zunächst belegte Modul endgültig nicht bestanden wurde oder als nicht bestanden gilt.

One of the following mandatory modules worth 2 C must be successfully completed. After having been registered for the chosen module a registration for another module is not allowed until the candidate has definitively failed the first chosen module or the examination in this module has been counted “failed”.

bb. Elective modules

Es müssen mindestens 2 Module im Umfang von jeweils mindestens 2 C erbracht werden. Dafür können mit Zustimmung des Graduiertenausschusses Module aus der Göttinger Graduiertenschulen für Gesellschaftswissenschaften oder aus dem fachspezifischen Lehrangebot der beteiligten Universitäten entnommen werden. Der Graduiertenausschuss veröffentlicht eine Liste von Modulen, für die die Zustimmung nach Satz 2 als erteilt gilt.

At least two modules with each worth at least 2 C must be successfully completed. Modules from the involved universities or the Goettingen Graduate School of Social Sciences can be chosen and must be accepted by the examining board.

8. PhD program "Sustainability Transitions in Food Production: Alternative Protein Resources from a Socio-technical Perspective""

Es müssen Leistungen im Umfang von insgesamt wenigstens 24 C nach Maßgabe der nachfolgenden Bestimmungen erfolgreich erbracht werden.

a. Subject-specific PhD modules

Es müssen folgende Module im Umfang von insgesamt 6 C erfolgreich absolviert werden:

The following modules worth overall 6 C must be successfully completed:

b. Statistical-methodological modules

Es müssen mindestens 6 Credits aus nachfolgendem Angebot erworben werden müssen:

At least 6 C must be completed from the following list of modules:

c. PhD seminar

Folgendes Modul muss absolviert werden:

The following module must be successfully completed:

d. Key competencies

Es müssen ingesamt wenigstens 6 C erworben, darunter eines der nachfolgenden Module zum wissenschaftlichen Schreiben oder der GGG-Kurs „Academic Writing: Effective Strategies for Publishing in English“. Sofern das Modul P.PA.SK2100 oder der geannte GGG-Kurs gewählt werden, müssen weitere 3 bzw. 4 C durch durch Absolvierung weiterter Module der Graduiertenschulen oder aus dem fachspezifischen Lehrangebot der Universität erworben werden und können im Einzelverfahren durch den Graduiertenausschuss anerkannt werden.

Overall at least 6 C must be successfully completed, among them at least one of the following modules on scientific writing or the GGG course "Academic Writing: Effective Strategies for Publishing in English". In case the module P.PA.SK2100 or the above-mentioned GGG course are chosen, 3-4 C must be further completed by means of further modules from the graduate schools or from the subject-specific teaching offer of the university. The achievements will be accepted by the examination board.

9. RTG 2654 Sustainable Food Systems

Doktorandinnen und Doktoranden, die im Rahmen des RTG 2654 Sustainable Food Systems promovieren, müssen Module im Umfang von insgesamt wenigstens 30 C nach Maßgabe der folgenden Bestimmungen erfolgreich absolvieren.

At least 30 C must be succesfully completed according to the following regulations.

a. Compulsory courses

Es müssen folgende Module im Umfang von insgesamt 21 C erfolgreich absolviert werden:

At least 21 C must be succesfully completed:

b. Elective courses

Es müssen Module im Umfang von insgesamt 6 C erfolgreich absolviert werden.

At least 6 C must be succesfully completed.

c. Professional skills courses

Es muss das folgende Modul im Umfang von 3 C nach Maßgabe der dort genannten Bestimmungen erfolgreich absolviert werden.

At least 3 C must be succesfully completed according to the following regulations.

Georg-August-Universität Göttingen **Module P.AG.0001: PhD Colloquium plants and soils in agriculture**	6 C 3 WLH

Learning outcome, core skills: PhD students practice the scientific presentation of their work. They learn to discuss results and critically reflect on their own work as well as that of their fellow student. Moreover PhD students expand their knowledge of current research in the field of Crop Sciences.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: PhD Colloquium plants and soils in agriculture (Seminar) *Contents*: Research projects, current status and results of theses in the Agropedology, Grassland Science , Crop Production , Plant Nutrition and Quality Plant-Based Products fields are presented and discussed.	3 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one’s own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Johannes Isselstein
Course frequency: each winter semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.AG.0002: Carl Sprengel colloquium**	6 C 3 WLH

Learning outcome, core skills: Students acquire the competence to process and present research results. They will then defend their results in an interdisciplinary discussion.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Carl Sprengel colloquium (Seminar) *Contents*: The colloquium is organized by external scientists and members of the participating institutes and departments. Students get an overview of current scientific topics in their own and neighboring disciplines. Within the colloquium, students present important results from their own research in a lecture followed by an interdisciplinary discussion (Evaluation seminar)	3 WLH
Examination: Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one’s own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Bernd Steingrobe
Course frequency: each winter semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 60	

Georg-August-Universität Göttingen **Module P.AG.0003: PhD seminar agricultural economics and rural development**	6 C 3 WLH

Learning outcome, core skills:	**Workload:**
In the module, the participants submit their research results to a public discussion amongst specialist. The participants improve their speaking and presentation skills. By participating in other courses, the doctoral students receive a broad professional overview of current research topics and technical approaches of Agricultural Economics.	Attendance time: 42 h Self-study time: 138 h

Course: PhD seminar agricultural economics and rural development (Seminar) *Contents*: In the doctoral seminar, each PhD student at the Department of Agricultural Economics and Rural Development presents their work (design, empirical results, and so fourth) at least 3 times. The seminar will take place weekly during the semester.	3 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one’s own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Matin Qaim
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 60	

Georg-August-Universität Göttingen **Module P.AG.0004: Ecology seminar**	6 C 3 WLH

Learning outcome, core skills: Students acquire the competence to process and present research results. They will then defend their results in an interdisciplinary discussion.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Ecology Seminar (Seminar) *Contents*: The colloquium is organized by external scientists and members of the participating institutes and departments. Students get an overview of current scientific topics in their own and neighboring disciplines. Internationally renowned speakers present ecological themes from the fields of Conservation Biology, Plant Ecology, Animal Ecology, Agroecology, Landscape Ecology, and Global Change Biology. Within the colloquium, students present important results from their own research in a lecture followed by an interdisciplinary discussion (Evaluation seminar).	3 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Catrin Westphal
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 35	

Georg-August-Universität Göttingen **Module P.AG.0005: Colloquium animal sciences**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Critical analysis of presented scientific data and derivation of new scientific questions. Presentation and discussion of scientific results to an academic audience.	Attendance time: 56 h Self-study time: 124 h

Course: Colloquium animal sciences (Seminar) *Contents*: Within this course, PhD students present the topics of their research from the general field of Livestock Sciences and leave them open for critical discussion.	4 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Imke Traulsen
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 35	

Georg-August-Universität Göttingen **Module P.AG.0006: Colloquium phytomedicin**	6 C 3 WLH

Learning outcome, core skills:	**Workload:**
Critical analysis of presented scientific data and derivation of new scientific questions. Presentation and discussion of scientific results to an academic audience	Attendance time: 42 h Self-study time: 138 h

Course: Colloquium phytomedicin (Seminar) *Contents*: Within this colloquium, scientists present topics from the entire field of Phytomedicine and Crop Production for all PhD students in the Department of Crop Sciences. Additionally, PhD students from the Division of Plant Pathology and Plant Protection field present results of their own research and open them up to critical discussion.	3 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Andreas von Tiedemann
Course frequency: each winter semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 36	

Georg-August-Universität Göttingen **Module P.AG.0007: Plant pathology and plant protection seminar**	6 C 3 WLH

Learning outcome, core skills: Presentation of one's own scientific project and its defense within the context of a discussion in English. Professionally critical and constructive follow-up discussion of others results.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Plant pathology and plant protection seminar (Seminar) *Contents*: Within this course, projects, project objectives and results will be presented to a scientific audience in English. A discussion amongst PhD students as well as scientific staff will follow. By doing so, students shall not only train their presentation technique and discussion skills, but also receive suggestions for further work in the discussion.	3 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Andreas von Tiedemann
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.AG.0008: Progress in plant breeding research**	6 C 3 WLH

Learning outcome, core skills: The PhD students learn, by the example of their own project, to present and critically discuss a scientific research project. They learn to present the progress of their work on the respective current scientific level and to critically assess the results, conclusions and relevance of their work to the area of research. Furthermore, PhD students learn to support other PhD students in the same process through active discussions.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Progress in plant breeding research (Seminar) *Contents*: Current topics	3 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research areas.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Christian Möllers
Course frequency: each winter semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0009: Environmental economics and resource economics**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Critical analysis of presented scientific data and derivation of new scientific questions. Presentation and discussion of scientific results before an academic audience	Attendance time: 56 h Self-study time: 124 h

Course: Environmental economics and resource economics (Seminar) *Contents*: Within this course, scientists present topics from the entire field of Environmental and Resource Economics for all PhD students in the Department of Agricultural Economics and Rural Development. Additionally, PhD students from the Environmental and Resource Economics field present results of their own research and open them up to a critical discussion.	4 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research areas.	6 C

Admission requirements:	**Recommended previous knowledge:**
none	none
Language: German, English	**Person responsible for module:** Prof. Dr. Rainer Marggraf
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 36	

Georg-August-Universität Göttingen **Module P.AG.0020: Scientific writing and publishing in crop sciences**	6 C 4 WLH

Learning outcome, core skills: The module is intended to provide skills and key competencies in the following areas: Structuring and writing of scientific texts in English, layout of graphics and tables, imaging of chemical structures and molecular sequences , literature search, citation, creating presentations in the form of posters and lectures, and reviewing of manuscripts by other authors. The PhD students become familiar with the procedures of the publication process from writing and submission of manuscripts up to peer review.	**Workload:** Attendance time: 40 h Self-study time: 140 h

Course: Scientific writing and publishing in crop sciences (Lecture, Exercise, Seminar) *Contents*: The course consists of a preparatory seminar with the following content focusing on: • Good scientific practice • What is a scientific paper? • Scientific publishing • Poster presentation • Writing grant proposals and submitting papers to journals • Reviewing a scientific manuscript • Communication skills Following these lectures, the PhD students write a publication for a scientific journal under individual guidance of their respective advisor. They also evaluate a separate manuscript written for publication by third parties.	4 WLH
Examination: Homework (max. 15 pages) **Examination requirements:** Drafting a manuscript for publication in a scientific journal; Review of an article	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Stefan Siebert
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0021: Scientific Writing for Agricultural Economists**	6 C (incl. key comp.: 6 C) 4 WLH

Learning outcome, core skills:	**Workload:**
PhD students attain knowledge of the various journals in national and international agricultural economics. They are familiar with the steps and conventions of the peer-review-process from the perspectives of authors and reviewers. They know how to use the literature databases and literature search engines which are used in (agricultural) economics. They understand how a journal article should be structured. They are thus capable of presenting their own research results in a manuscript, identifying suitable journals to which they can submit their manuscript, and undergo all the steps of the reviewing process through to publication.	Attendance time: 56 h Self-study time: 124 h

Course: Scientific writing for agricultural economists (Lecture, Exercise) *Contents*: Introduction to the writing of articles for peer-review scientific journals in agricultural economics.	4 WLH
Examination: Homework (max. 2 pages) and Manuscript of a publication (commented and revised by the supervisor) **Examination requirements:** Very good knowledge of the peer review journals in agricultural economics, the literature databases which are widely used in agricultural economics, and how they can be used. Understanding of the Impact Factor and how it is to be interpreted, how the peer review process works and whatis expected of authors and reviewers at various stages of this process .	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0022: Scientific writing and presenting for PhD candidates**	6 C 4 WLH

Learning outcome, core skills: Participants will acquire knowledge mentioned in the ‘Learning Objectives’ section found below and can implement these in the context of practical exercises based on their edited PhD thesis topics.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Scientific writting and presenting for PhD candidates (Lecture, Exercise) *Contents*: Writing scientific essays and monographs, design of tables and graphs, proper citations, creating presentations, structuring and rhetorical design of lectures.	4 WLH
Examination: Presentation (approx. 20 minutes, 50%) und homework (max. 30 pages, 50%) **Examination prerequisites:** Participation in 10 seminars in sequence of 2 semesters **Examination requirements:** Intensive knowledge and successful implementation of teaching the content of scientific articles and monographs, graphic and table design, presentation and lecture design. Presentation of a rated seminar report (in terms of content Summary and formal review) for an attended seminar preparation, a PowerPoint presentation and holding a lecture. Creation of a scientific publication.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Jürgen Hummel
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0023: Competence in reseach integrity**	2 C (incl. key comp.: 2 C) 1 WLH

Learning outcome, core skills: Participants will be enabled, according to the guidelines of good scientific practice, to conduct research. They have understood the basic principles of science (trust, honesty, transparency, etc.) and from them they are aware of the growing responsibility to follow them. They are aware of areas of conflict and can apply strategies to avoid and / or resolve conflicts.	**Workload:** Attendance time: 10 h Self-study time: 50 h

Course: Competence in reseach integrity (Seminar) *Contents*: Standards of good scientific practice in the areas of data management, data presentation, scientific publishing, authorship and self-responsible scientific work.	1 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Active participation, reviewing, presentation and discussion of a case study in the group. Contentwise, topics covered will include datamanagement, data presentation, authorship, supporting committees as well as conflict behavior.	2 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** PD Dr. Martin Potthoff
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:
PhD Students are not allowed to chose the module P.Forst.113 if they have already chosen P.AG.0023.

Georg-August-Universität Göttingen **Module P.AG.0024: Advanced skills for selecting, reviewing and understanding scientific articles**	3 C 2 WLH

Learning outcome, core skills: Students will learn the necessary skills to select, understand and review scientific publications, as well as to critically evaluate and summarise in writing the methods, techniques and results presented within. These are essential skills necessary for scientific research and the scientific writing of publications.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Advanced skills for selecting, reviewing and understanding scientific articles (Lecture, Exercise) *Contents*: Overview of researching and finding relevant articles, methods utilised for evaluating techniques and results, and the analysis and assessment if suitability of articles for reference purposes. In addition, the writing of English texts will be practiced, using some examples and writing exercises	2 WLH
Examination: Presentation (approx. 60 minutes, 40%) and written report (max. 10 pages, 60%) **Examination requirements:** By applying the skills acquired in the lectures, the students will be required to select a relevant subject area, select a number of journal articles and describe, analyse and evaluate the information. The written report should include a brief summary and critical evaluation of each paper referenced, followed by a short review of the selected subject area.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Alexander Mott
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 8	

Georg-August-Universität Göttingen **Module P.AG.0040: Selected aspects of utility and economic welfare theory**	6 C 4 WLH

Learning outcome, core skills: PhD students • are qualified to evaluate and optimize economic- and fiscal policy programs and policies ; • are able to participate in the discussion of currently relevant economic welfare problems and develop their own approaches.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Selected aspects of utility and economic welfare theory (Seminar) *Contents*: The topics of this module change from year to year. The full range of benefits and welfare theory will be covered. The course will begin with topics from the field of applied ethics and the history of utility theory respectively. Afterwards, curret theory developments will be covered. Application-oriented topics will be discussed towards the end of the semester.	4 WLH
Examination: Presentation (approx. 20 minutes, 50%) and oral (approx. 25 minutes, 50%) **Examination requirements:** Detailed knowledge of the entire spectrum of utility and welfare theory, especially of applied ethics or history of utility theory, and current developments in theory. The oral examination covers the entire material dealt with during the semester. One selected aspect is to be elaborated on in detail during the oral examination.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Rainer Marggraf
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.AG.0041: Selected methodological problems of environmental and resource economics**	6 C 4 WLH

Learning outcome, core skills: PhD students • are capable of developing proposals for solving relevant methodological problems; • have extensive knowledge in the relevant modeling and statistical methods, their evaluation and use for environmental- and economic resource analyses and their application for the delineation of reasonable policy recommendations	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Selected methodological problems of environmental and resource economics (Seminar) *Contents*: Varying topics in the fields of modeling- and statistical methods that may be applied in positive and normative environments– as well as in economic resource analyses	4 WLH
Examination: Presentation (approx. 20 minutes, 50%) and oral (approx. 25 minutes, 50%) **Examination requirements:** Very good knowledge in the fields of modeling and statistical methods, that may be applied in positive and normative environments– as well as economic resource analyses The oral examination concerns the the entire material dealt with during the semester. One selected subproblem is to be elaborated on in detail during the oral examination.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Rainer Marggraf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.AG.0042: Bioanalytical techniques in environmental and plant sciences**	6 C 4 WLH

Learning outcome, core skills: The students learn and understand the physico - chemical principles and the areas of application of the presented methods. They are able to practically apply the following methods in the laboratory. 1. Mass spectrometry and ionization techniques 2. Chromatographic and electrophoretic methods for the separation and Analysis of peptides and proteins 3. Biophotonic 4. Immunochemical methods 5. Molecular genetic detection methods	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Bioanalytical techniques in environmental and plant sciences (Lecture, Exercise) *Contents*: In many areas of environmental and life sciences, profound knowledge of modern, analytical methods is of fundamental importance. This module focuses on molecular techniques. The theoretical principles that will be tought in this Module are to be supported by the selection and implementation of suitable analytic techniques. In the laboratory, the methods are applied on a practical level.	4 WLH
Examination: Oral examination (approx. 25 minutes) **Examination prerequisites:** Regular participation **Examination requirements:** Very good practical knowledge of mass spectrometry and ionization techniques, chromatographic and electrophoretic methods for the separation and analysis of peptides and proteins, biophotonics, immunochemical methods and molecular genetic verification proceedures. The oral examination encompasses the entire material covered during the semester.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Jens Niemeyer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.AG.0043: Efficiency and productivity analysis: stochastic approaches**	6 C 3 WLH

Learning outcome, core skills: Students acquire the necessary methods to independently design and implement econometrically-based efficiency and productivity analyses. Students learn how to use various software packages that can be applied in this field. They are able to test both the empirical results as well as economic implications. They understand how to present results, tests and policy implications suitable to the subject in a written or oral fashion	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Efficiency and productivity analysis: stochastic approaches (Lecture, Exercise) *Contents*: This module focuses on econometric methods to increase the efficiency and productivity analysis of companies in the agri-food sector. Particular attention is paid to the explanation of the differences in the values ofefficiency.	3 WLH
Examination: Oral (approx. 30 minutes, 50%) and project work (max. 12 pages, 50%) **Examination requirements:** Profound knowledge of econometric foundations of stochastic frontier anlysis (SFA) ; maximum likelihood estimation: asymptotics, tests, numerical specificities; models with composite error terms; estimate of the production frontier and efficiency of the individual; expansion of behavior-based approaches (cost, profit function); distance functions; productivity breakdown.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0044: Molecular genetics: fundamental techniques in plant pathology and entomology**	6 C 4 WLH

Learning outcome, core skills: The participants will learn basic and advanced techniques of DNA analysis and manipulation, which are used in phytopathology.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Molecular genetics: fundamental techniques in plant pathology and entomology (Internship, Lecture) *Contents*: The module is to provide PhD students in the field of Phytomedicine with the tools for the implementation of molecular biological studies. To achieve this, the following techniques will be discussed theoretically and the following concrete experiments will be conducted: Isolation of nucleic acids (total DNA , plasmids, DNA fragments from gels), plasmid amplification by transformation by E. coli, restriction analysis, DNATyping, southern hybridization using not radiaktiver markings, real - time PCR for the diagnosis of cereal pathogens, DNA cloning.	4 WLH
Examination: Term Paper (max. 10 pages) **Examination requirements:** Very good knowledge of the fundamental and advanced techniques of DNA analysis and manipulation that are being used in phytopathology. A protocol is to be prepared for laboratory experiments and their analyses documenting the success of the conducted experiments and the underlying concepts.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** N. N.
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module P.AG.0045: New methods and developments in animal sciences**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Students will learn the latest methods and techniques mentioned in the ‘Teaching Content’ section found below. They are able to apply and implement this theoretical, science-based knowledge in practical exercises. Potential problems are to be detected and solutions for them independently developed and presented	Attendance time: 56 h Self-study time: 124 h

Course: New methodes and developments in animal sciences (Lecture, Exercise) *Contents*: Learning and application of the latest methods and techniques from the field of Animal Sciences: 1. Advanced methods of breeding and statistical genetics (12 h) 2. Advanced methods of animal nutrition and feed science (12 h) 3. Theoretical and practical behavioral observations and their specific evaluation methods (12 h) 4. Methods for the assessment of production systems (6 h) 5. Specific breeding techniques for fish (4 h) 6. Ultrasound applications in animal breeding (4 h) 7. Carcass classification and meat quality regulations (6h)	4 WLH
Examination: Referat (ca. 30 Minuten, 50%) mit schriftlicher Ausarbeitung (max. 10 Seiten, 50%) **Examination prerequisites:** Participation in the exercises **Examination requirements:** Very good knowledge and ability to apply new methods of animal husbandry, population genetics, animal nutrition, ethology and their specific evaluation methods, evaluation of production systems, specific breeding techniques for fish, the ultrasonic applications in animal breeding and carcass classification and meat quality regulations.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Imke Traulsen
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0046: Methods for quality assessment**	6 C 4 WLH

Learning outcome, core skills: The PhD students learn further analytical methods as well as their theoretical basics which go beyond the range of their actual research. They develop the ability to evaluate the achieved results in broader scientific context. In addition, they further improve their ability to work in a team, mutually discuss information, and share problems and solutions.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Methods for quality assessment (Lecture, Exercise) *Contents*: The module is to teach PhD students methods of quality analysis of plant-based materials and products. It is to teach theoretical and experimental basics. Examples of methods : • Compositional analysis by HPLC; thermal properties of starches; enzyme kinetics • Quality analysis of sugar beets • Special methods of mycotoxin analysis • Sensory of selected foods	WLH
Examination: Presentation (approx. 20 minutes) **Examination requirements:** Complete mastery of theoretical and instrumental fundamentals of methods for compositional analysis in plant products, quality analysis of beets and methods of mycotoxin analysis. Scientific analysis of the data obtained by means of statistical methods. A given presentation of the results in comparison with findings in literature.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Susanne Neugart
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module P.AG.0047: Linear statistical models with R**	6 C 3 WLH

Learning outcome, core skills: The students learn state-of-the-art methods of statistical data analysis. This is a key competence that is often asked for in job applications.	**Workload:** Attendance time: 30 h Self-study time: 150 h

Course: Linear statistical models with R (Lecture) *Contents*: Introduction to linear statistical models; introduction to the software package „R". The following topics are covered: Experimental design, hypothesis tests, variable types; general linear models (regression, analysis of variance and covariance); generalized linear models; generalized linear mixed models; model selection and information theory.	3 WLH
Examination: Term Paper (max. 20 pages) **Examination prerequisites:** Succeed in all written homework **Examination requirements:** Written thesis on one of the topics described above. Each student has to prove that he/she is able to analyze a given complex dataset on his/her own. The thesis will have to be written in English language. It is also possible to analyze an example dataset from the student´s dissertation thesis.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Catrin Westphal
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.AG.0048: Mathematics for Economists**	6 C 2 WLH

Learning outcome, core skills: The students are to learn and be able to understand important economic publications that are based on complex mathematical theories	**Workload:** Attendance time: 34 h Self-study time: 146 h

Course: Mathematics for economists (Lecture, Seminar) *Contents*: The course is designed for graduate students at the University of Göttingen and the students are to gain a deeper mathematical understanding of current economic theories. In the lectures, the students learn the basics of optimization, as well as depressions in the areas of dynamic optimization and optimal control. In the seminars, students will independently work on and present significant publications based on the mathematical theories taught.	2 WLH
Examination: Presentation (approx. 75 minutes, 50%) and homework (max. 20 pages, 50%) **Examination requirements:** Knowledge of the mathematical (optimization, dynamic optimization and Optimal Control) and the economic publications taught.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Xiaohua Yu
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0060: Advanced methods in animal breeding and statistical genetics**	6 C 4 WLH

Learning outcome, core skills: Participants will gain detailed knowledge of the methods mentioned in the ‘Learning Objectives’ section found below and are able to apply these with appropriate methods (e.g. computer programmes) with simulated and real data.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Advanced methods in animal breeding and statistical genetics (Lecture, Exercise, Seminar) *Contents*: Knowledge of current methodological developments in the field of quantitative-genetic animal breeding and of statistical genetics, including the areas parameter and breeding value estimation in linear and non-linear models, design of breeding plans, description and management of genetic diversity within and between populations, statistical methods of genome analysis, haplotyping linkage mapping and association analyses, population genomics	4 WLH
Examination: Presentation (approx. 30 minutes, 50%) and homework (max. 20 pages, 50%) **Examination requirements:** Very good knowledge of the methodological aspects of their own projects. Participants present the methodological aspects of their own projects as part of an in-depth, compulsory seminar including the methodological principles and also submitting the methodological description in writing. The participants complete module-accompanying graded exercises.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Henner Simianer
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0061: Advanced methods and developments in livestock and bio-engineering**	6 C 4 WLH

Learning outcome, core skills: Fundamentals of physics and biology, animal sciences, applied, mathematics, fundamentals of agricultural engineering, basic engineering processes (Mixing, separation, heating, cooling, etc.).	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Advanced methods and developments in livestock and bio-engineering (Lecture, Excursion, Seminar) *Contents*: 1. Process modeling in the following areas of application : 2. Emergence and spread of gaseous and particulate emissions, nitrification and denitrification in nitrogen-containing aqueous media, management and control of air climatic systems. 3. Neural Networks and Fuzzy Logic models and their application in the context of Precision Livestock Farming. 4. Radio Frequency Identification (RFID) in production processes of livestock.	4 WLH
Examination: Presentation (approx. 20 minutes, 50%) and oral (approx. 30 minutes, 50%) **Examination requirements:** In-depth knowledge in the areas of emissions , use of air-climatic systems, neural networks and the use of RFID technology in livestock.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Herman Van den Weghe
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0062: Bacteriology**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
Students will be able independently identify phytopathogenic bacteria, based on symptomatology, by detecting important phenotypic, physiologischbiochemischer features and using modern serological tests. Experimental work will be carried out in groups and the results obtained presented to the entire group and discussed in detail.	Attendance time: 56 h Self-study time: 124 h

Course: Bacteriology (Internship, Lecture) *Contents*: Demonstration of key bacterial diseases in inoculated plants and description of typical features for their diagnosis; general handling phytopathogenic bacteria, isolation methods, cultivation, characterization and identification of phytopathogenic bacteria; inokulationstechniken, physiological typing of phytopathogenic bacteria, using different serological detection methods, resistance testing to bacteria.	4 WLH
Examination: Oral examination (approx. 20 minutes) **Examination prerequisites:** Group protocol and result presentation **Examination requirements:** Very good knowledge of the taxonomy of phytopathogenic bacteria, detection of important bacterial diseases, control of isolation and cultivation techniques of bacterial pathogens. Identification of bacteria on the basis of phenotypic, physiological/ biochemical characteristics. Knowledge of serological detection methods. Possibilities of controlling phytopathogenic bacteria.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Dr. Athanassios Mavridis
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module P.AG.0064: Genome analysis in livestock**	6 C 4 WLH

Learning outcome, core skills: Within different projects students will be familarized with molecular biological techniques including gene isolation and sequencing as well as functional gene analysis. In the course of the project work students will achieve a highly independent experimental level.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Genome analysis in livestock (Exercise) *Contents*: Learning of standard molecular biological techniques (RNA, DNA isolation, DNA-sequencing, construction of DNA libraries, electrophoresis, cloning), use of molecular biological techniques in genetic analysis.	4 WLH
Examination: Project work (max. 30 pages) **Examination requirements:** Profound knowledge of standard molecular biology techniques (RNA, DNA isolation, DNA - sequencing, construction of DNA libraries, electrophoresis, cloning) and the use of molecular biology techniques for genetic analysis. Preparation of a project-based scientific manuscript	6 C

Admission requirements: none	**Recommended previous knowledge:** Knowledge of molecular biology and biotechnology in livestock sciences.
Language: German, English	**Person responsible for module:** Prof. Dr. Dr. Bertram Brenig
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 4	

Georg-August-Universität Göttingen **Module P.AG.0065: Market integration and price transmission**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
PhD students have read relevent journal articles about market integration and price transmission. They understand the methods and results described in these articles. They are able to identify unresolved questions and research needs in this subject area. They are able to plan and perform appropriate research projects. They can discuss the acquired knowledge in this specialization with colleagues, and present before an academic audience.	Attendance time: 60 h Self-study time: 120 h

Course: Market integration and price transmission (Lecture, Exercise) *Contents*: Theory and measurement of the integration of agricultural markets - Reading course foradvanced students.	4 WLH
Examination: Presentation (approx. 20 minutes, 75%) and oral (approx. 20 minutes, 25%) **Examination requirements:** Good knowledge of the determinants of relationships between prices on spatially separated markets, between different prices for agricultural products and between prices at different stages of the food chain. Advanced econometric methods for the analysis of price transmission process (threshold and other non-linear cointegrations-models, Markov-switching-methods, parity bounds models).	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0066: Molecularbiological/immunological Methods in Animal Science, Englisch**	6 C 4 WLH

Learning outcome, core skills: The students are proficient in the safe handling of the laboratory courses in theory and practice learned molecular biological and immunological techniques. Students can transfer these techniques specific to the needs of biotechnological projects. Objectives: Advanced knowledge of modern molecular biological / immunological laboratory techniques. 1. Molecular biological techniques for the analysis of prokaryotic and eukaryotic genes; Virus genetics; (12h) 2. Construction and analysis of gene libraries (4 h) 3. Protein Biochemical and immunological techniques (12h) 4. Basic techniques in the preparation of samples and their cultivation 5. Molecular biological techniques for the analysis of infectious agents and Toxins (6h) 6. Analysis of cellular receptors and ligand/receptor interactions 7. Immunology of B and T cells; Antibody techniques (8h) 8. Cytokines, signal transduction and immune regulation (8h)	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Molecularbiological/immunological methods in animal science, Englisch (Lecture, Exercise) *Contents*: Molecular and immunological techniques are important elements for the planning of biotechnology-related scientific experiments. This module is directed primarily for students specializing in international animal sciences that use these techniques and therefore want to acquire advanced knowledge and skills. The theoretical basis of the related key technologies is taught in small laboratory groups and practiced in manageable projects.	4 WLH
Examination: Oral examination (approx. 25 minutes) **Examination requirements:** Advanced knowledge of molecular biology techniques for the analysis of prokaryotic and eukaryotic genes; virus genetics; the construction and analysis of genebanks, protein biochemical and immunological techniques, basic techniques in the preparation of samples and their cultivation, molecular biological techniques for the analysis of infectious agents and toxins, the analysis of cellular receptors and ligand/receptor interactions, immunology of B and T cells; antibody Techniques, cytokines, signal transduction and immune regulation.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

English	Prof. Dr. Dr. Claus-Peter Czerny
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 5	

Georg-August-Universität Göttingen **Module P.AG.0067: Molecularbiological/immunological methods in animal science, Deutsch**	6 C 4 WLH

Learning outcome, core skills: The students are proficient in the safe handling of the laboratory courses in theory and practice learned molecular biological and immunological techniques. Students can transfer these techniques to the needs of specific biotechnological projects. Objectives: Advanced knowledge of modern molecular biological/immunological laboratory techniques 1. Molecular biological techniques for the analysis of prokaryotic and eukaryotic genes;Virus genetics; (12h) 2. Construction and analysis of gene libraries (4h) 3. Protein Biochemical and immunological techniques (12h) 4. Basic techniques in the preparation of samples and their cultivation 5. Molecular biological techniques for the analysis of infectious agents and Toxins (6h) 6. Analysis of cellular receptors and ligand/receptor interactions 7. Immunology of B and T cells; Antibody techniques (8h) 8. Cytokines, signal transduction and immune regulation (8h)	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Molecularbiological/immunological methods in animal science, Deutsch (Lecture, Exercise) *Contents*: Molecular and immunological techniques are important elements for the planning of biotechnology-related scientific experiments. This module is directed primarily for students specializing in international animal sciences that use these techniques and therefore want to acquire advanced knowledge and skills. The theoretical basis of the related key technologies is taught in small laboratory groups and practiced in manageable projects.	4 WLH
Examination: Oral examination (approx. 25 minutes) **Examination requirements:** Advanced knowledge of molecular biology techniques for the analysis of prokaryotic and eukaryotic genes; virus genetics; the construction and analysis of genebanks, protein biochemical and immunological techniques, basic techniques in the preparation of samples and their cultivation, molecular biological techniques for the analysis of infectious agents and toxins, the analysis of cellular receptors and ligand/receptor interactions, immunology of B and T cells; antibody Techniques, cytokines, signal transduction and immune regulation.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language:	**Person responsible for module:**

German	Prof. Dr. Dr. Claus-Peter Czerny
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 5	

Georg-August-Universität Göttingen **Module P.AG.0068: New areas in plant breeding**	6 C 2 WLH

Learning outcome, core skills: The PhD students learn to work on a current problem or a current technology in applied genetics and plant breeding.	**Workload:** Attendance time: 24 h Self-study time: 156 h

Course: New areas in plant breeding (Seminar) *Contents*: New methodological approaches and selected results of current breeding research. For this seminar, each PhD student gives one lecture per term (semester) on an area that does not correspond with the topic of the PhD thesis.	2 WLH
Examination: Presentation (2 x approx. 30 minutes) **Examination requirements:** Comprehensive knowledge of new methodological approaches in current breeding research as well as mastery of the appropriate methods.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** apl. Prof. Dr. Wolfgang Link
Course frequency: each summer semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0069: Crop production in Central Europe including upstream and downstream sectors**	6 C 6 WLH

Learning outcome, core skills: The module is to teach PhD students skills and key competencies in the following areas : • In-depth, direct experience of decision-making, as well as task and organization of political institutions, administration and economy in the context of social demands. • Case-specific, technical training of the participants, including follow-up topics by creating posters.	**Workload:** Attendance time: 80 h Self-study time: 100 h

Course: Crop production in Central Europe including upstream and downstream sectors (Excursion, Seminar) *Contents*: The course consists of preparatory seminars and field trips to companies, research institutes, associations and farms with the following thematic priorities: Getting to know: Plant production in the context of processes in • upstream area (breeding, plant protection, fertilizer, farm equipment) • downstream (food industry) or the entire plant production	6 WLH
Examination: Presentation (approx. 20 minutes) **Examination prerequisites:** Participation in seminars and excursions **Examination requirements:** Profound knowledge of plant production in the context of processes in upstream area (breeding, plant protection, fertilizer, farm equipment) and in downstream area (food industry). Independent analysis of case studies on the topic, including a presentation with preparation and follow-up.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** apl. Prof. Anne-Katrin Mahlein
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0070: Risk analysis and risk management in agriculture**	6 C 5 WLH

Learning outcome, core skills: Students will acquire the methodological tools for measuring, analyzing and managing risks in agricultural business. They are able to identify individual problems and apply appropriate techniques to solve them. They acquire methodological competences that enable the students to conduct their own research.	**Workload:** Attendance time: 64 h Self-study time: 116 h

Course: Risk analysis and risk management in agriculture (Lecture, Exercise) *Contents*: The focus of this module is risk measurement, risk analysis and risk management. The course contents include : • Distributions and stochastic processes • Value-at-risk concept • Risk-programming approaches • Insurance • Valuation of derivatives including real options and weather derivatives.	5 WLH
Examination: Project work (4 x 90 minutes) **Examination requirements:** Very good knowledge of statistical concepts, damage and index-related insurance, dynamic programming and the option pricing theory.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Mußhoff
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0071: Value-added chain and healthy nutrition**	6 C 4 WLH

Learning outcome, core skills: The connections or feedback mechanisms that exist and how social demands are implemented. are to be taught in this course.	**Workload:** Attendance time: 60 h Self-study time: 120 h

Course: Methods for quality assessment (Lecture, Exercise) *Contents*: The module addresses the interlinking relationships of elements within the value chain in terms of representing and evaluating a healthy diet. The module includes introductory lectures, case studies, project work and excursions .	WLH
Examination: Vortrag (ca. 20 Minuten, 50%); Hausarbeit (max. 15 Seiten, 50%) **Examination requirements:** About the areas in the value chain, such as crop production, including selected upstream and downstream areas of the food industry (first and second processing stage), trade (wholesale and retail , including consulting and Marketing) and the consumer (dietary habits and health aspects) have very good knowledge shall be demonstrated	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Susanne Neugart
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.AG.0072: Topics in rural development economics II**	6 C 4 WLH

Learning outcome, core skills: The doctoral students gain a deeper understanding of relevant topics of rural development economics. They learn to critically evaluate scientific articles and to highlight and present the important aspects of a scientific article. Based on critical reading of the scientific articles, they also gather experience on how to structure articles and how to formulate concise statements. Moreover, PhD students learn how to write a scientific referee report. Course participants are thus introduced to different aspects of scientific writing and publishing.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Topics in rural development rconomics II (Lecture) *Contents*: This course provides PhD Students with an overview of relevant topics in rural development economics. The module is structured as a reading course, building on selected articles from relevant international journals. Students are required to read announced articles before the classroom sessions, in order to enable a critical debate in class. The course also teaches students on how to write a scientific referee report. PhD students are required to present one of the articles in class and to write a referee report for a scientific paper. The articles selected for the course are clustered around key topics relevant to rural development economics, such as listed below: • The food system transformation and smallholder farmers; • Rural livelihood strategies and income diversification; • Adoption and impacts of modern agricultural technology; • Economics of nutrition and health; • Gender and intra - household resource allocation.	4 WLH
Examination: Presentation (approx. 30 minutes, 50%) and homework (max. 3 pages, 50%) **Examination requirements:** In-depth knowledge on relevant topics of rural development economics. Ability to highlight and critically reflect the important aspects of a scientific article. Preparing a referee report for a scientific paper.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0073: Consumer behavior and demand analysis: theory and applications**	6 C 3 WLH

Learning outcome, core skills: Students will get to know advanced theoretical concepts of consumer behavior and the use of demand models.	**Workload:** Attendance time: 40 h Self-study time: 140 h

Course: Consumer behavior and demand analysis I: Theory and applications (Lecture, Exercise) *Contents*: The module was designed for PhD students at the university of Göttingen and is supposed to introduce students to the theoretical concept of consumer behavior and the application of demand models. After a short introduction to the theory (demand models, separability, aggregation, Lancester model), the course will mainly focus on econometric modeling of demand models, the expansion of the theory (habit persistence and quality) and on econometric applications, particularly on panel data from developing countries. Afterwards, the students will write about own applications in a term paper.	3 WLH
Examination: Presentation (approx. 15 minutes, 25%) and homework (max. 35 pages, 75%) **Examination requirements:** Theoretical knowledge, such as the foundations of demand models, separability, aggregation, Lancaster model, habit persistence, quality and panel econometrics, as well as their application and the publications dealt with during the course.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Xiaohua Yu
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0074: Empirical research methods in agribusiness**	6 C 3 WLH

Learning outcome, core skills: In particular, knowledge on techniques such as preference research (especially discrete-choice-analysis), regression and causality analysis (especially PLS) will be deepened. Prerequisite to taking the course is a basic understanding of empirical social research and statictics.	**Workload:** Attendance time: 44 h Self-study time: 136 h

Course: Empirical research methods in agribusiness (Lecture, Exercise) *Contents*: The module is geared towards doctoral students who conduct an empirical study for their PhD thesis. It contains an overview over available secondary statistics, the steps of method selection, the specific advantages and disadvantages of qualitative and quantitative methods, interviewing techniques, as well as uni-, bi- and multivariate procedures of data analysis.	3 WLH
Examination: Term Paper (max. 20 pages) **Examination requirements:** Deepened knowledge of study design and statistical evaluation procedures	6 C

Admission requirements: Introduction in empirical social sciences; Basic knowledge in statistics and econometrics; Basic knowledge in statistical programmes (SPSS, Stata, R, etc.)	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Achim Spiller
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0075: Consumer economics: theory and application for valuing Non-Market goods**	6 C 3 WLH

Learning outcome, core skills: The students learn the theories and applications for the valuation of non-market goods.	**Workload:** Attendance time: 40 h Self-study time: 140 h

Course: Consumer economics: theory and application for valuing Non-Market goods I (Lecture, Exercise, Seminar) *Contents*: The methods for valuing non-market good (e.g. health and security systems, climate, clean water and the conservation of habitats) are employed, among other fields, in agricultural and environmental economics. The course will enable students to obtain a fundamental understanding of the theory of non-market goods. They will learn how to use the most important econometric techniques for the application. The course consists of three parts: 1. Introduction to the theory; 2. Introduction to econometric foundations and 3. Practical application of real data.	3 WLH
Examination: Presentation (approx. 75 minutes, 50%) and homework (max. 20 pages, 50%) **Examination requirements:** Theoretical knowledge (measurement of welfare changes, structure of preference, non-use values and values under uncertainty), methods (contingent valuation methods, choice experiments, experimental auction, heterogeneities in non-market evaluations and hedonic techniques) and their application.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Xiaohua Yu
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.AG.0076: Soil biogeochemistry**	6 C 3 WLH

Learning outcome, core skills: The students obtain the competence to process research findings, present them and defend them in an interdisciplinary discussion.	**Workload:** Attendance time: 48 h Self-study time: 132 h

Course: Soil biogeochemistry (Seminar) *Contents*: The seminar will be held by external scientists and members of both soil science departments. The students receive an overview over current scientific topics of their own and neighboring disciplines. During the course of the seminar, the students present important findings from their own research project in a presentation followed by an interdisciplinary discussion (evaluation seminar).	3 WLH
Examination: 3 Progress reports (written each max. 5 pages or oral each approx. 20 minutes) **Examination requirements:** Very good knowledge of one's own field of research.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Yakov Kuzyakov
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module P.AG.0077: Isotopes in ecosystem sciences**	6 C 3 WLH

Learning outcome, core skills: The students obtain the competence to use different isotope methods in their research.	**Workload:** Attendance time: 48 h Self-study time: 132 h

Course: Isotopes in ecosystem sciences (Lecture, Seminar) *Contents*: The course is geared towards younger scientists who apply or want to apply different tracer methods and isotopes in their experiments. Topics: • introduction to isotopic geochemistry, tracer methods • stable and radioactive isotopes; analytical methods • security and particular characteristics of working with radioactive isotopes • applications in process research • carbon cycle and humus research • interactions soil – plant, rhizosphere • nutrient uptake through the plant • incubation studies on soil respiration and degradation of plant remains and pesticides in the soil • radiocarbon dating, other dating methods • migration / translocation studies • erosion estimation • autoradiography and imaging for allocation studies • sorption and exchange studies • paleo-reconstruction • analyzing results, artifacts and errors, detection limits • coupling of tracer methods and biomarkers	3 WLH
Examination: Presentation (approx. 20 minutes, 50%) and written examination (30 minutes, 50%) **Examination prerequisites:** Participation in lectures and seminars **Examination requirements:** Very good knowledge of isotope applications in ecosystem research	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Yakov Kuzyakov
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

once	
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module P.AG.0078: Fungal Secondary Metabolism**	6 C 3 WLH

Learning outcome, core skills: Vorstellung wissenschaftlicher Projektes in einer fürs Fachpublikum geeigneten Form inklusive Darstellung technischer Details, kritische Analyse und konstruktive Diskussion technischer Aspekte der Experimente und der Datenprozessierung und Interpretation.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Fungal Secondary Metabolism (Seminar) *Contents*: Im Rahmen dieser Veranstaltung werden Konzepte, Forschungsansätze und aktuelle Ergebnisse auf dem Gebiet des pilzlichen Sekundärmetabolismus von Studierenden sowie wissenschaftlichen Mitarbeitern und Gästen vorgestellt und kritisch diskutiert. Die Diskussionen soll Anregungen für aktuelle Forschungsprojekte liefern. Das Seminar erfolgt in englischer Sprache.	3 WLH
Examination: Präsentation, Referat oder Korreferat (ca. 30 Minuten) **Examination requirements:** Darstellung und kritische Diskussion technischer Aspekte wissenschaftlicher Projekte in englischer Sprache.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Petr Karlovsky
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.AG.0079: Systematic review and meta-analysis in ecology**	3 C 2 WLH

Learning outcome, core skills: The students will learn how to perform a systematic review and a quantitative research synthesis based on the tools of meta-analysis, as well as how to deal with biases and limitations. They will receive a broad overview of the existing statistical methods, and learn how to choose the most appropriate ones.	**Workload:** Attendance time: 30 h Self-study time: 60 h

Course: Systematic review and meta-analysis in ecology (Exercise, Seminar) *Contents*: Ecological questions can be answered by systematic reviews that identify, appraise, select and synthesize all high quality relevant research evidence. Systematic reviews often use meta-analysis as statistical technique to combine the results of suitable studies. During the course the following statistical methods and problems will be discussed and used with real ecological data: calculation of effect sizes, cumulative effect size and heterogeneity, fixed- and random-effect meta-analysis, biases. The theoretical introduction will be combined with exercises and a term paper on the computer in software R. The course language is English.	2 WLH
Examination: Term Paper (max. 10 pages) **Examination requirements:** Processing of a data set with meta-analysis in the term paper	3 C

Admission requirements: MSc Degree	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. rer. nat. Péter Batáry
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.AG.0081: Mycotoxins and fungal chemical ecology**	6 C 3 WLH

Learning outcome, core skills: Presentation of scientific projects in a suitable manner for the professional public, including presentation of technical details, critical analysis and constructive discussion of technical aspects of the experiments and the data processing and interpretation .	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Mycotoxins and fungal chemical ecology (Seminar) *Contents*: During this event, concepts, research approaches and current results in the field of fungal secondary metabolism of students are presented as well as critically discussed umongst scientific staff. The discussions will provide inspiration for current research projects. The seminar is in English.	3 WLH
Examination: Presentation (approx. 30 minutes) **Examination requirements:** Presentation and critical discussion of technical aspects of scientific projects in English.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Petr Karlovsky
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.AG.0082: Colloquium Progress in Plant Nutrition**	6 C 2 WLH

Learning outcome, core skills: Introduction and advancement in independent scientific work: • Presentation and discussion of recent research results • Integration of own results to state of the art • Discussion with specialized audience • Deduction of further research questions based on own results and findings of neighbouring research projects	**Workload:** Attendance time: 48 h Self-study time: 132 h

Course: Colloquium Progress in Plant Nutrition *Contents*: Students hold lectures in the Department of Crop Science, research staff of IAPN and other institutions. PhD students gain a general overview of the current scientific questions in plant nutrition research and related disciplines such as crop physiology, crop science, plant protection, soil hydrology and others.	
Examination: 2 Presentations (à approx. 30 minutes, 60%) with written outline (à max. 10 pages, 40%) **Examination prerequisites:** Participation in 18 colloquia **Examination requirements:** Profound knowledge in the own research fiel**.**	

Admission requirements: none	**Recommended previous knowledge:** According to the subject
Language: German, English	**Person responsible for module:** Prof. Dr. Klaus Dittert
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:** 1 - 6
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0083: Colloquium Sugar beet Research**	6 C 3 WLH

Learning outcome, core skills: Guidance to independent scientific work: • Presentation of research results • Integration of own results to state of the art • Discussion with specialized audience • Deducation further research questions	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Colloquium Sugar beet Research *Contents*: Lectures hold by PhD students of the Department of Crop Science, research staff of the IfZ and other institutions. PhD students obtain a general overview of the current scientific questions in sugar beet research and related fields as there are crop science, crop nutrition, physiology, plant protection and others. Die Studierenden bekommen einen Überblick über aktuelle Forschungsthemen der Zuckerrübenforschung und angrenzender Gebiete in den Bereichen Pflanzenbau, Pflanzenernährung, Physiologie, Phytomedizin und weiteren.	3 WLH
Examination: 3 Progress reports (Lecture of 15 minutes, one-page handout), not graded **Examination prerequisites:** Participation of 18 colloquia **Examination requirements:** Profound knowledge of the own research field	6 C

Admission requirements: none	**Recommended previous knowledge:** According to the subject
Language: German, English	**Person responsible for module:** PD Dr. Anne-Katrin Mahlein
Course frequency: each winter semester	**Duration:** 3 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0084: Soil geographical and agroecological field studies**	9 C 6 WLH

Learning outcome, core skills: Fachbezogene Kenntnisse der Bodenbildung und –nutzung, Ökosystemare Zusammenhänge, Biogeochemische Kreisläufe.	**Workload:** Attendance time: 192 h Self-study time: 78 h

Course: Bodengeographische und Agrarökologische Feldübungen (Exercise, Seminar) *Contents*: Die Lehrveranstaltung soll einen Querschnitt durch mehrere Klimazonen aufzeigen: Besonderheiten der Bodenbildung und -nutzung, sowie Landwirtschaft werden in Zusammenhang mit Klima, Vegetation, Geomorphologie, Nährstoff- und Wasserkreisläufen im Ökosystem und Landschaft erläutert. Typische Böden unveränderter, natürlicher Ökosysteme werden selbstständig im Gelände prozessorientiert beschrieben und mit ackerbaulich genutzten Böden verglichen. Rückschlüsse auf die Änderung des Prozessgefüges in Böden durch ackerbauliche Nutzung sollen durch die Doktoranden betreut von den Studenten erarbeitet werden. Großversuche zur Landschafts- und Agrarraumgestaltung, Biosphärenreservate und Naturschutzgebiete sowie und landwirtschaftliche Betriebe verschiedener Betriebsstrukturen werden besichtigt.	9 WLH
Examination: Präsentation (2x ca. 30 Minuten) (Gewichtung 50%) und Hausarbeit (max. 20 Seiten) (Gewichtung 50%) **Examination requirements:** Vorbereitendes Seminar: Pedogeneseprozesse und biogeochemische Stoffkreisläufe entlang des Klimagradienten temperierte Ökosysteme sollen vor dem Hintergrund aktueller biogeochemischer Forschung vorgestellt werden. Um erste Einblicke in Lehrtätigkeit am Interface zur Forschung zu erhalten, sollen die Doktoranden dann im Feld die aktuellen Forschungsthemen mit Master- und Bachelorstudenten in kleinen Gruppen unter Anleitung der Lehrbeauftragten diskutieren. Die aktuellen Themen und Fragestellungen, die sich im Rahmen dieser Diskussionsrunde ergeben, sollen dann im Nachbereitungs-Seminar anhand innovativer, aktueller Prozessstudien ausgeführt und vertieft werden. Über diesen Themenkomplex, sowie die wissenschaftliche Diskussionsrunde mit den MSc und BSc-Studenten im Feld soll dann eine bis zu 20seitige Hausarbeit verfasst werden, die das Thema in der nötigen wissenschaftlichen Tiefe darstellt.	9 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Yakov Kuzyakov
Course frequency:	**Duration:**

each summer semester	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0085: Computing in Science - Basics of Computational Biology**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students will learn the basics in working with linux operating systems and shell scripting. The scripting language python will be used to introduce the student to the analysis of biological high troughput data.	Attendance time: 28 h Self-study time: 62 h

Course: Computing in Science - Basics of Computational Biology (Lecture, Exercise) *Contents*: Usage of the Linux command line and automatisation of processes with shell scripts. Analysis of large data sets from high throughput methods like Next Generation Sequencing using the scripting language python and published command line tools.	2 WLH
Examination: Term Paper (max. 20 pages) **Examination requirements:** By applying the aquired skills in linux and scripting, students are required to analze a data set from a hight troughput experiment. The written report should include all the commands and scripts used for the analysis as well as a short written summary.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Clemens Falker-Gieske
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0087: Advanced Theories of Consumer Research**	6 C 4 WLH

Learning outcome, core skills: Die Promovierenden erhalten einen Überblick über fortgeschrittene Theorien des Konsumentenverhaltens und entwickeln ein Verständnis für grundlegenden Fragestellungen und neuere Fachentwicklungen. Dies befähigt sie, in ihren Promotionen fundierte Hypothesen und Untersuchungsmodelle zu entwickeln.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Fortgeschrittene Theorien der Konsumforschung (Lecture, Seminar) *Contents*: • Konsumforschung als interdisziplinäres Forschungsgebiet • Fachtraditionen • Ökonomische Zugänge • (Sozial-)Psychologische Zugänge • Soziologische Zugänge • Kulturwissenschaftliche Zugänge • Physiologische Zugänge • Ansätze des Neuromarketings • Modellierung des Konsumverhaltens • Neue empirische Ansätze • Anwendungen: Marketing, Verbraucherschutz und Ernährungspolitik *Course frequency:* each winter semester	4 WLH
Examination: Oral Presentation (approx. 30 minutes), not graded **Examination prerequisites:** Anwesenheitspflicht im Seminar **Examination requirements:** Präsentation eines ca. 30-minütigen Forschungsvortrags zu einer der vorgestellten Theorien bzw. Theoriekonstrukte, bezogen auf ein aktuelles Problem z.B. aus dem eigenen Promotionsthema.	6 C

Admission requirements: none	**Recommended previous knowledge:** Grundkenntnisse der empirischen Sozialforschung und der Statistik
Language: English	**Person responsible for module:** Prof. Dr. Achim Spiller
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.AG.0089: Advanced Methods in Molecular Life Sciences**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students learn to plan and design an experimental approach to address a scientific problem in the laboratory. Through autonomous research guided by supervision, students will learn to answer molecular biological questions with current laboratory techniques. Doctoral students will acquire a deep understanding of the underlying techniques and will be able to apply and combine them in a sensible manner. In the form of a presentation, students will learn to present the experimental design, which they have developed, in a convincing manner. Die Studierenden erlernen die Durchführung eines wissenschaftlichen Projekts im Labor zu planen. Durch Selbstrecherche und unter Anleitung lernen die Studierenden mithilfe aktueller Methoden molekularbiologische Fragestellungen zu beantworten. Dabei erlangen die Promotionsstudierenden i. W. eine vertiefte Methodenkompetenz und lernen über das reine Verständins der Methode hinaus, diese sinnvoll einzusetzen und verschiedene Methoden zu kombinieren. Durch Präsentation der Ergebnisse sollen die Studierenden lernen, einen selbst entwickelten Versuchsansatz überzeugend zu präsentieren.	Attendance time: 28 h Self-study time: 62 h

Course: Advanced Methods in Molecular Life Sciences (Lecture, Exercise) *Contents*: Students will receive a molecular biological problem to work on and ultimately solve. After two introductory lectures by the tutors, the participants should work on the problem at the level of the current state of research. Adequate methods should be researched and combined in a reasonable fashion in order to solve the assigned problem. To accomplish this goal, students will receive support during the seminar and example approaches will be presented by the tutors. Concluding students will have to present their approach to solving the problem. Den Studierenden wird ein molekularbiologisches Problem zur Bearbeitung und Lösung gegeben. Nach zwei einführenden Veranstaltungen durch die Dozenten haben die Studierenden die Aufgabe die Fragestellung auf dem aktuellen Stand der Forschung im Detail zu bearbeiten. Dazu sollen adequate Methoden recherchiert und kombiniert werden, um einen experimentellen Ansatz zur Lösung des Problems zu erarbeiten. Dazu wird in weiteren Veranstaltungen Hilfestellung gegeben und es werden exemplarische Ansätze vorgestellt. Abschließend sollen die erarbeiteten Ergebnisse in einer Präsentation vorgestellt werden.	2 WLH
Examination: Oral Presentation (approx. 45 minutes) **Examination requirements:** By giving a presentation students should show that they are capable of presenting state of the art research methods and approaches in a comprehensible manner.	3 C

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: English	**Person responsible for module:** Dr. rer. nat. Clemens Falker-Gieske
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 8	

Georg-August-Universität Göttingen **Module P.AG.0090: intensive seminar plant protection technology**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden vertiefen Ihre Kenntnisse über Pflanzenschutz und Anwendungstechnik.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Intensivseminar Pflanzenschutztechnik (Excursion, Exercise, Seminar) *Contents*: Ort = wechselnde Orte: Lehrkooperation JKI Braunschweig, TU Braunschweig, Humboldt-Universität Berlin, Christian-Albrechts-Universität Kiel, Georg-August-Universität Göttingen • Beginn: einwöchiges Blockseminar am JKI-Fachinstitut für Anwendungstechnik, Vermittlung von Theorie und Praxis in der Anwendungstechnik • Anschließend Exkursionen und weitere Seminarteile an den beteiligten Universitäten Inhalte: Das Modul beschäftigt sich u.a. mit folgenden Inhalten • integrierter Pflanzenschutz, • alternative Pflanzenschutzverfahren, • Pflanzenschutz in Unterglaskulturen, • Drohnenbefliegung/Luftbilderfassung und -auswertung	4 WLH

Examination: Written examination (90 minutes) **Examination requirements:** Kenntnisse der im Seminar behandelten Themen.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Frank Beneke
Course frequency: each summer semester	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 6	

Georg-August-Universität Göttingen **Module P.AG.0091: Colloquium Agricultural Engineering**	6 C 3 WLH

Learning outcome, core skills: Anleitung zu selbstständigem wissenschaftlichen Arbeiten: • Präsentation und Diskussion von aktuellen Forschungsergebnissen • Einbinden der eigenen Ergebnisse in den Stand der Forschung • Diskussion mit Fachpublikum • Ableiten weiterer Fragestellungen aus den eigenen Ergebnissen	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Kolloquium Agrartechnik (Seminar) *Contents*: Vorträge im Kolloquium werden von Doktoranden des Departments für Nutzpflanzenwissenschaften, wissenschaftlichen Mitarbeitern von An-Instituten und anderer Institutionen gehalten. Die Studierenden bekommen einen Überblick über aktuelle Forschungsthemen der Forschung in der Agrartechnik und angrenzender Gebiete in den Bereichen Pflanzenbau, Maschinenbau, Informatik und anderen.	3 WLH

Examination: 3 Fortschrittsberichte (Präsentation ca. 15 Minuten mit 1-seitigem Handout), unbenotet, not graded **Examination prerequisites:** Teilnahme an 18 Kolloquien **Examination requirements:** Sehr gute Kenntnisse des eigenen Forschungsgebietes.	6 C

Admission requirements: none	**Recommended previous knowledge:** Themenspezifisch
Language: German, English	**Person responsible for module:** Prof. Dr. Frank Beneke
Course frequency: each winter semester	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AG.0092: Current topics in agroecology (Journal club)**	3 C 2 WLH

Learning outcome, core skills: The aim of the module is the critical examination, presentation and discussion of current articles on the topics of agrobiodiversity and agroecology (e.g. research article, review, perspective). The focus of the discussion should be on content, methods or analysis of writing style, presentation of results or structure/storyline. In addition, new methods of analysis or R packages can be presented and critically discussed.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Current topics in agroecology (Journal club) (Seminar) *Contents*: Each student must select a recent article related to agroecology and agrobiodiversity, present them during the seminar and lead a discussion within the group. All attendants must read the assigned article before each session and prepare discussion points. During the discussion, students will identify faults and successes of the methodology, data analysis and writing style of the manuscript.	2 WLH

Examination: Presentation (approx. 20 min, 100%) and moderation of discussion **Examination requirements:** Selection of appropriate articles, critical evaluation of studies, methods and scientific writing style.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Catrin Westphal
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.AW.0005: PhD seminar animal welfare**	6 C 3 WLH

Learning outcome, core skills: In the module, participants provide their research results to an open discussion amongst experts. The participants improve their public speaking and presentation skills. By participating in other module courses, the PhD students receive a broad professional overview of current research themes and specialized approaches of research areas. The preparation of progress reports contributes to the development of skills in writing scientific texts.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: PhD seminar animal welfare (Seminar) *Contents*: In the module, the participants submit their research results to a public discussion amongst specialist. The participants improve their speaking and presentation skills. By participating in other module courses, the PhD students receive a broad professional overview of current tesearch themes and specialized approaches of research areas. The preparation of progress reports contributes to the development of skills in writing scientific texts.	3 WLH
Examination: Presentation (approx. 30 minutes) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research area and of relevant presentation requirements. The results presented in a lecture will be evaluated and commented on by internal or external examiners. It will not be graded but poor performance will lead to a repetition of the talk and the work supervisors will reflect on it with each individual. For each of the presentations, the PhD student writes up a progress report in which the current state of the PhD project is outlined again in written form. The first work supervisor is responsible for accepting the progresss report as well as evaluating and revising it.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Achim Spiller
Course frequency: each semester	**Duration:** Several Sem.
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.AW.0006: Legal, ethical and economic approaches to evaluate of animal welfare-related transformation processes**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden kennen Ausprägungen der Transformationsprozesse in der intensiven Nutztierhaltung können und sind in der Lage diese aus rechtlicher, ethischer und ökonomischer Perspektive zu interpretieren.	**Workload:** Attendance time: 40 h Self-study time: 50 h

Course: Rechtliche, ethische und ökonomische Analyse von tierwohlbezogenen Transformationsprozessen in Gesellschaft und Politik *Contents*: Das Modul ist als Blockveranstaltung konzipiert und wird durch einen vor- und einen nachbereitenden Lektürekurs ergänzt. Kernthemen, welche im Rahmen des Moduls behandelt werden, sind: • Rechtliche Einordnung von gesellschaftspolitischen Transformationsprozessen (Prof. Martinez) • Ethische und philosophische Einordnung von gesellschaftspolitischen Transformationsprozessen (Prof. Kunzmann, Prof. Steinfath) • Bewertung von Szenarien tierwohlbezogener gesellschaftspolitischer Transformationsprozesse (Prof. Spiller) • Verhaltensökonomische Experimente zur Messung der gesellschaftlichen Akzeptanz von tierwohlbezogenen gesellschaftspolitischen Transformationsprozessen (Prof. Bizer)	2 WLH

Examination: Präsentation, Referat oder Korreferat (ca. 20 Minuten) **Examination requirements:** Ausprägungen von Transformationsszenarien erkennen, mit interdisziplinären Theorien verbinden und aus rechtlicher, ethischer und ökonomischer Perspektive bewerten können.	3 C

Admission requirements: keine	**Recommended previous knowledge:** keine
Language: German	**Person responsible for module:** Prof. Dr. Achim Spiller
Course frequency: once	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.AW.0007: Transformation in livestock production systems (theories of social transformation research)**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden sind in der Lage Theorien und Forschungsansätze der gesellschaftlichen Transformationsforschung zu benennen. Außerdem können sie einzelne Theorien und Forschungsansätze in Hinblick auf die ihre Zukunftsfähigkeit in der gesellschaftlichen Transformationsforschung beurteilen.	**Workload:** Attendance time: 40 h Self-study time: 50 h

Course: Transformation der Tierhaltung (Theorien und Forschungsansätze der gesellschaftlichen Transformationsforschung) *Contents*: Das Modul ist als Blockveranstaltung konzipiert und wird durch einen vor- und einen nachbereitenden Lektürekurs ergänzt. Kernthemen, welche im Rahmen des Moduls behandelt werden, sind: • Globaler Fleischkonsum und Wettbewerbsfähigkeit der deutschen Veredelungswirtschaft • Nachhaltigkeitsherausforderungen der tierwohlbezogenen Transformationsprozesse • Betrachtung von Transformationsszenarien aus Sicht der Politik, Gesellschaft und Wissenschaft.	2 WLH

Examination: Präsentation, Referat oder Korreferat (ca. 20 Minuten) **Examination requirements:** Auswahl und Bewertung einer Theorie/eines Forschungsansatzes der gesellschaftlichen Transformationsforschung.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Achim Spiller
Course frequency: once	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.AW.0008: Different Methods for animal welfare assessment**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden sind in der Lage aktuelle Methoden der Bewertung des Tierschutzes in der Landwirtschaft auf Basis von Tierwohlindikatoren nachzuvollziehen. Außerdem können sie wissenschaftliche Anwendungsverfahren und Erhebungen in Hinblick auf ihre Praxisakzeptanz, Validität, Reliabilität und Kosten einordnen und bewerten.	**Workload:** Attendance time: 40 h Self-study time: 50 h

Course: Methoden der Tierwohlbewertung *Contents*: Das Modul ist als Blockveranstaltung konzipiert und wird durch einen vor- und einen nachbereitenden Lektürekurs ergänzt. Kernthemen, welche im Rahmen des Moduls behandelt werden, sind: • Produktionscontrolling in der Geflügelhaltung (Prof. Andersson) • Tierbezogene Indikatoren und Bewertungssysteme (Prof. Knierim) • Tierverhaltensmessungen -bewertungen und –steuerung (Prof. Gerken) • Steuerung und Beeinflussung der Tiergesundheit (Prof. Kemper)	2 WLH

Examination: Präsentation, Referat oder Korreferat (ca. 20 Minuten) **Examination requirements:** Verschiedene Methoden der Tierwohlbewertung müssen benannt, eingeordnet und im Hinblick auf ihre wissenschaftliche Güte und ihre praktische Anwendbarkeit bewertet werden können.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Robby Andersson
Course frequency: once	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.AW.0009: Ecological and economic methods to evaluate animal welfare related transformation processes in the supply chain**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Die Studierenden kennen ökonomische und verhaltenswissenschaftliche Methoden zur Bewertung von Transformationsprozessen in Wertschöpfungsketten und sind in der Lage, die Transformation von Organisationsstrukturen in Wertschöpfungsketten mit dem erlernten methodischen Wissen zu bewerten.	Attendance time: 40 h Self-study time: 50 h

Course: Ökologische und ökonomische Bewertungsmethoden von tierwohlbezogenen Transformationsprozessen in Wertschöpfungsketten *Contents*: Das Modul ist als Blockveranstaltung konzipiert und wird durch einen vor- und einen nachbereitenden Lektürekurs ergänzt. Kernthemen, welche im Rahmen des Moduls behandelt werden, sind: • Aufbau und Herausforderungen von tierschutzbezogenen Transformationsprozessen in Wertschöpfungsketten (Prof. Theuvsen) • Investitionstheoretische Bewertung von Tierwohlmaßnahmen im landwirtschaftlichen Betrieb (Prof. Mußhoff) • Methoden zur Analyse des Konsumentenverhaltens gegenüber alternativen Vermarktungsmöglichkeiten von Tierwohlprodukten (Prof. Enneking, Prof. Recke) • Tierwohlbezogene Transformationsprozesse in agrarischen Intensivgebieten: geographische Methoden (Prof. Tamásy)	2 WLH

Examination: Präsentation, Referat oder Korreferat (ca. 20 Minuten) **Examination requirements:** Darstellung und kritische Bewertung von ausgewählten Methoden zur Analyse von Transformationsprozessen in Wertschöpfungsketten der Tierproduktion	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Oliver Mußhoff
Course frequency: once	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.GF.CM1: Survey techniques and analysis of firm and household data**	6 C 4 WLH

Learning outcome, core skills: The implementation and analysis of surveys, observations or experiments is at the heart of almost all (agricultural) economic dissertations. The PhD students should have the competence to acquire sound design and data analysis and subsequently be able to produce quality surveys for publication.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Survey techniques and analysis of firm and household data (Lecture, Exercise) *Contents*: The core objective of the module is teaching advanced techniques to design and analyze primary data collected at the household and firm level. The module is interdisciplinary and initially involves survey methods for data collection in Europe as in the context of developing countries (survey forms, scaling forms, avoidance of social desirability effects, exercises, survey design). In addition, multivariate analysis methods are taught for data analysis and practiced in the PC lab. In the foreground are various methods of regression analysis, factor analysis, cluster analysis and structural equation models.	4 WLH
Examination: Term Paper (max. 15 pages) **Examination requirements:** Oriented methods assignment: The knowledge obtained through this module should be applied by the students. This may include empirical data from case studies or records or even questions from their own thesis may be used.	6 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Achim Spiller
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.GF.CM3: Global Food doctoral seminar**	6 C 3 WLH

Learning outcome, core skills: In the module, participants present their research results for discussion. They improve their public speaking and presentation skills. They also attend the seminar presentations of other doctoral students, thus training their ability to give critical feedback and gaining a broad overview of current research topics and approaches in agricultural and development economics.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: GlobalFood doctoral seminar (Seminar) *Contents*: In the PhD seminar, each PhD student in GRK 1666 presents his/her work (design, empirical results etc.) at least 3 times. Before each presentation, a paper has to be submitted. The seminar is held bi-weekly during the semester or in blocked form by arrangement.	3 WLH
Examination: Presentation (approx. 30 minutes, 50%) and homework (max. 15 pages, 50%) **Examination prerequisites:** Participation in 18 seminars **Examination requirements:** Very good knowledge of one's own research area and the corresponding presentation requirements. Resutls, which will be presented in the lecture and paper, will be reviewed and commented on by a discussant. There will be no grade, but poor performance will lead to required repetition of the seminar and will be discussed with the supervisors.	6 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Matin Qaim
Course frequency: each semester	**Duration:** Several Sem.
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.GF.CM4: Global Food research colloquium**	3 C 2 WLH

Learning outcome, core skills: In the colloquium, PhD students learn relevant research approaches, methods and how to deal with challenges in carrying out research projects. They also learn to critically assess other researchers' work and actively participate in scientific discussions.	**Workload:** Attendance time: 80 h Self-study time: 10 h

Course: GlobalFood research colloquium (Seminar) *Contents*: In the colloquium, experienced scientists working on topics relevant for Global Food will present their research, which is then discussed in detail. The colloquium is held around four times per semester upon agreement.	2 WLH
Examination: Oral examination (approx. 10 minutes) **Examination requirements:** Very good knowledge of the broader research field, including critical discussion of approaches from neighboring disciplines. Active participation in the discussions will be assessed individually.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Matin Qaim
Course frequency: each semester	**Duration:** Several Sem.
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.GF.ME01: Advanced supply chain management**	3 C 2 WLH

Learning outcome, core skills: The PhD students will gain a deeper understanding of essential managerial issues of supply chain management. Expand their theoretical and methodological knowledge and are able to independently develop the key concepts of a technical paper, describe writtenly and present. The PhD students will gain important theoretical knowledge that will assist in designing their empirical investigations as well as their interpretation and discussion of their findings	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Advanced supply chain management (Seminar) *Contents*: Based on selected technical papers in international literature, the PhD students become familiarized with the in-depth questions as well as theoretical and methodological concepts of supply chain management. The PhD students develop the main statements and, if necessary, empirical results of a relevant, seminal contribution. The course will focus on the following issues: • Supply Chain Design, • Supply Chain Controlling, • Supply chain performance, • Sustainable Supply Chain Management, • Terms, concepts and research methods of supply chain management	2 WLH
Examination: Presentation (approx. 30 minutes, 50%) and homework (max. 10 pages, 50%) **Examination requirements:** Knowledge of the theoretical and methodological concepts, the terms and research methods of supply chain management and knowledge in the areas of supply chain controlling, supply chain performance, supply chain design and sustainable supply chain management.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ludwig Theuvsen Dr. Verena Otter
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.GF.ME02: Market integration and price transmission**	3 C 2 WLH

Learning outcome, core skills: PhD students have read relevent journal articles about market integration and price transmission. They understand the methods and results described in these articles. They are able to identify unresolved questions and research needs in this subject area. They are able to plan and perform appropriate research projects. They can discuss the acquired knowledge in this specialization with colleagues, and present before an academic audience.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Market integration and price transmission (Lecture, Exercise) *Contents*: Theory and measurement of the integration of agricultural markets - Reading course foradvanced students.	2 WLH
Examination: Presentation (approx. 10 minutes, 50%) and oral (approx. 10 minutes, 50%) **Examination requirements:** Good knowledge of the determinants of relationships between prices on spatially separated markets, between different prices for agricultural products and between prices at different stages of the food chain. Advanced econometric methods for the analysis of price transmission process (threshold and other non-linear cointegrations-models, Markov-switching-methods, parity bounds models).	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.GF.ME03: Applied time series analysis**	3 C 2 WLH

Learning outcome, core skills: Die PhD-Studierenden erlangen ein tieferes Verständnis der zeitreihenanalytischen Fundierung von Marktintegrations- und Volatilitätsanalysen. Sie vertiefen die ökonometrischen Grundlagen der Zeitreihenanalyse und werden mit der zu Grunde liegenden Testtheorie vertraut gemacht. Des Weiteren erhalten sie die Fähigkeit, der aktuellen Literatur in diesem Bereich folgen zu können. Die Studierenden sind in der Lage, eigene Untersuchungen anhand der vorgestellten Methodik vornehmen zu können.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Applied time series analysis (Lecture, Exercise) *Contents*: Das Modul zielt darauf ab, den Teilnehmenden wichtige Grundlagen der Zeitreihenanalyse zu zu vermitteln. Hierbei werden insbesondere Techniken zur Analyse von Marktintegration und Volatilität im Mittelpunkt stehen. Ein weiterer Schwerpunkt liegt auf der empirischen Anwendung der Methoden, die anhand von Beispieldaten am Computer vorgestellt wird. Die ausführliche Diskussion von aktuellen Veröffentlichungen, die auf der Anwendung von Zeitreihentechniken im Agrar- und Entwicklungsbereich beruhen, rundet die Veranstaltung ab.	2 WLH
Examination: Praktischer Leistungsnachweis **Examination requirements:** Durchführung einer Übung am PC einschließlich Kurzüberblick über die Interpretation der Ergebnisse	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: not specified	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations: Das Modul wird im Wintersemester alle 2 Jahre angeboten.

Georg-August-Universität Göttingen **Module P.GF.ME05: Experimental economics approaches in the laboratory**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
The first part of this course introduces the method of experimental economics. In the second part, the course will enable students to gain experience with the methods of experimental economic research; as a small group under guidance by developing, implementing and analyzing their own experiment.	Attendance time: 28 h Self-study time: 62 h

Course: Experimental economics approaches in the laboratory (Lecture, Exercise) *Contents*: Game theory is a mathematical theory that examines the strategic interaction of individuals. With their help, you can find out what players with certain cognitive abilities are likely to do. The experimental game theory studies how people actually behave.	2 WLH
Examination: Homework (max. 15 pages, 50%) and team project work (, 50%) **Examination requirements:** Participation in the team project and writing a scientific paper.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Claudia Keser
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.GF.ME06: Experimental economics approaches in the field**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
The PhD students are to learn how to cultivate a critical position with regard to the use of field experiments. They deal with the practical aspects of the design and implementation of field experiments. Their own project proposals are a first step for the creation of an article in a professional journal.	Attendance time: 28 h Self-study time: 62 h

Course: Experimental economics approaches in the field (Lecture) *Contents*: The aim of the course is to provide PhD students with the same conditions under which an actual field experiment would be planed and performed in order for them to become familiar with the process. The PhD students are to critically reflect on one or two articles from literature. In addition, they are to develop and introduce a separate field experiment project. The project is to describe the problem to be investigated, the state of the relevant literature, reflect and hypothesisize, the experimental designs and include the expected Results. The crurse shall address : • Definition of a field experiment • Carrying out a field experiment • Experimental Design • External validation of the field experiment Field experiments on the topics" Collective Action" " Risk preferences ", " Temporal Consistency" , " risk-sharing ", " Environmental Control	2 WLH
Examination: Presentation (approx. 30 minutes, 50%) and project work (max. 10 pages, 50%) **Examination requirements:** Development of a research idea based experimental methods. Knowledge of the relevant literature and a presentation of the experimental setup. Representation of the importance of the research idea to the existing literature and research. Knowledge to be used in the experimental method and suggestions for future research ideas.	3 C

Admission requirements:	**Recommended previous knowledge:**
Membership in GRK 1666	none
Language: English	**Person responsible for module:** Prof. Marcela Ibanez Diaz
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.GF.ME07: Risk analysis and risk management in agriculture**	3 C 2 WLH

Learning outcome, core skills: Students will acquire the methodological tools for measuring, analyzing and managing risks in agricultural business. They are able to identify individual problems and apply appropriate techniques to solve them. They acquire methodological competences that enable the students to conduct their own research. Students will acquire the methodological tools for measuring, analyzing and managing risks in agricultural business. They are able to identify individual problems and apply appropriate techniques to solve them. They acquire methodological competences that enable the students to conduct their own research.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Risk analysis and risk management in agriculture (Lecture, Exercise) *Contents*: The focus of this module is risk measurement, risk analysis and risk management. The course contents include: • Distributions and stochastic processes • Value-at-risk concept • Risk-programming approaches • Insurance • Valuation of derivatives including real options and weather derivatives	2 WLH
Examination: Term Paper (max. 10 pages) **Examination requirements:** Very good knowledge of statistical concepts, damage and index-related insurance, dynamic programming and the option pricing theory.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Mußhoff
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.GF.ME08: Topics in rural development economics**	3 C 3 WLH

Learning outcome, core skills: The doctoral students gain a deeper understanding of relevant topics of rural development economics. They learn to critically evaluate scientific articles and to highlight and present the important aspects of a scientific article. Based on critical reading of the scientific articles, they also gather experience on how to structure articles and how to formulate concise statements. Moreover, PhD students learn how to write a scientific referee report. Course participants are thus introduced to different aspects of scientific writing and publishing.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Topics in rural development economics (Seminar) *Contents*: This course provides PhD Students with an overview of relevant topics in rural development economics. The module is structured as a reading course, building on selected articles from relevant international journals. Students are required to read announced articles before the classroom sessions, in order to enable a critical debate in class. The course also teaches students on how to write a scientific referee report. PhD students are required to present one of the articles in class and to write a referee report for a scientific paper. The articles selected for the course are clustered around key topics relevant to rural development economics, such as listed below: • The food system transformation and smallholder farmers; • Rural livelihood strategies and income diversification; • Adoption and impacts of modern agricultural technology; • Economics of nutrition and health; • Gender and intra - household resource allocation.	3 WLH
Examination: Presentation (approx. 45 minutes) **Examination requirements:** In-depth knowledge on relevant topics of rural development economics. Ability to highlight and critically reflect the important aspects of a scientific article. Preparing a referee report for a scientific paper.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.GF.ME09: Advanced development economics: Micro aspects**	3 C 2 WLH

Learning outcome, core skills: Ability to deal with and work on sophisticated theoretical and empirical literature of micro – oriented development deconomics.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Advanced development economics: Micro aspects (Lecture, Exercise) *Contents*: There are micro-economic aspects of development economics taught here in particular : • Poverty and inequality measurement, • Land markets, labor markets, credit markets and insurance markets in rural areas, • Equity and Growth, • Gender and Development, • Analytical methods and simulation techniques	2 WLH
Examination: Presentation (approx. 15 minutes, 25%) and written assessment (60 minutes, 75%) **Examination requirements:** Knowledge of current theoretical and empirical literature on the micro – oriented development economics.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. PhD Stephan Klasen
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.GF.SE1: Intercultural communication**	3 C 1 WLH

Learning outcome, core skills: • ability to critically reflect and relativize one's own cultural views • attention to and increased sensitivity towards others' cultural orientation and awareness of foreign cultural standards • insights concerning the influence of cultural options on decision-making and problem-solving • strategic handling of own and foreign styles of life and communication, with the goal of solving problems together and achieving a strategic way of dealing with culture-specific conflicts • competence of dealing with issues occurring in an international or multicultural work environment	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Intercultural communication (Seminar) *Contents*: The intercultural training is a practically oriented as well as theory-based intercultural training. It conveys the general terminological and action-oriented foundations for an intercultural focus in the areas of science and research. By conducting simulations, analyzing cases and critical incidents, the module offers a variety of practical scenarios from science and research. In these, people with different cultural backgrounds work on tasks, highlighting both their own cultural identity as well as learning to strive for common solutions in intercultural teams and during research periods.	1 WLH
Examination: Presentation (approx. 10 minutes, 50%) and homework (max. 10 pages, 50%) **Examination prerequisites:** Participation in the seminar **Examination requirements:** Short presentation and "tasks" with culture-specific content from the personal experience of the participants	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Bettina Roß
Course frequency: every 4th semester; Winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Additional notes and regulations:

Das Modul wird im Wintersemester alle 2 Jahre angeboten.

Georg-August-Universität Göttingen **Module P.GF.SE2: Gender and diversity**	3 C 1 WLH

Learning outcome, core skills: 1. Knowledge • understanding gender and diversity theories and their historical development • understanding the relevance and meaning of current debates on gender and diversity issues 2. Abilities • getting to know methods of analyzing gender relations and differences regarding personal backgrounds • transferring the imparted knowledge to one's own (scientific) practice • Abilities on the meta level: critical reflection of social phenomena, interdisciplanry work, networking.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Gender and diversity (Seminar) *Contents*: „Gender" and „diversity" are being widely talked about and have – at least theoretically – been introduced to the scientific common sense and the everyday (work-) life of many people. Despite terms' popularity, however, both of these concepts often remain vague and are reduced to singular aspects such as gender equality issues between men and women. The participants learn to grasp current gender theories as well as theories on staff diversity in their complexity and discuss their transfer into (scientific) practice. If interested, students may do so in regard to their own PhD project. Besides the teaching of contents relevant to gender and diversity topics, the module centers on the participants and their questions, suggestions and competences.	1 WLH
Examination: Presentation (approx. 10 minutes, 50%) and homework (max. 10 pages, 50%) **Examination prerequisites:** Participation in the seminar **Examination requirements:** Short presentation and „tasks" with gender and diversity specific content from the personal experience of the participants.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Bettina Roß
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**

Maximum number of students: 20	

Additional notes and regulations:
Every 4th semester; Winter semester

Georg-August-Universität Göttingen **Module P.GF.SE3: Presentation skills**	3 C 1 WLH

Learning outcome, core skills: • Structure and design of a presentation: „do's and don'ts", taught through differentiated feedback on the presentations • Identifying one's own strengths and using them for presentations • Practicing self-perception and perception by others through perception exercises, role plays and interaction with the audience, reaction to questions • Optimizing breathing, voice, language and body language by working on breathing, voice and body • Flexible handling of difficult presentation situations • Dealing with stress and stage fright	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Presentation skills (Seminar) *Contents*: The course offers participants the possibility to develop ideas and strategies for the design of their presentation and for how to prepare for a presentation. The standards of presentations in a scientific context are high and their quality is often vital to professional advancement. Besides the professional preparation and presentation of the content, personal appearance is of decisive importance for the success of a presentation: How confidently do I handle stress? How do I manage unexpected situations? Do I succeed at creating a pleasant atmosphere for myself and the audience? What does it mean to act in a scientific context as novice scientist?	1 WLH
Examination: Presentation (approx. 30 minutes) **Examination prerequisites:** Participation in the seminar **Examination requirements:** Creating and giving a presentation on the student's own research project, feedback on the presentation of other research project (as a discussant)	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Bettina Roß
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.GF.SE4: Career development**	3 C 1 WLH

Learning outcome, core skills: • The participants shall be made aware of strategic steps they may take at an early stage which can work towards a particular career goal. • This course will support the students in identifying and evaluating their own abilities and competences and shall encourage them to consider different career paths according to their strengths and preferences • By means of a self-assessment test as well as feedback from the group, the students gain a differentiated image of their own strengths. Working alone or in teams and/or conducting one-on-one consultations will enable students to find out how their strengths may sensibly be combined with professional expectations and life dreams.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Career development (Seminar) *Contents*: The course offers participants the possibility of further developing the possibilities, ideas and strategies for their professional future. PhD graduates have a very high, often very specific professional expertise. In the field of their doctoral project they are absolute experts. They rarely are aware, however, that they have not only obtained expertise in their respective field of study, but also abilities and competences which open up a variety of career paths for them and qualify them for a number of different tasks and responsibilities. This course provides participants with the opportunity to reflect upon their career steps taken so far, become aware of one's own motivation, and plan next steps individually and in interaction with their colleges. A central goal of the course is to make formal and informal rules of the "system of science" more transparent. Furthermore, necessary steps for the ability to work within or outside of the field of science	1 WLH
Examination: Homework (max. 10 pages) **Examination prerequisites:** Participation in the seminar **Examination requirements:** Preparing and giving a presentation on one's own career planning; feedback on someone else's presentation on their career planning (as "human resources manager/ interviewer")	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Bettina Roß
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**

Maximum number of students: 20	

Additional notes and regulations:
Every 4th semester; Summer semester

Georg-August-Universität Göttingen **Module P.GF.SE5: Project management**	3 C 1 WLH

Learning outcome, core skills: • Basic knowledge of definitions and types of projects, characteristics and structure of projects • Managing a project cycle: planning, implementation, completion, evaluation • Instruments during the different phases of a project: start-up and information procurement, development of a controlling and reporting system, presentation • Members and staff: project manager and project team: roles, tasks, responsibilities, communication and information management; employee recruitment and staff management • Rules and regulations • Time- and self- management • Intercultural aspects	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Project management (Seminar) *Contents*: The course offers participants the opportunity to learn about professional project management and develop ideas and strategies for their own (research) projects. Project management is necessary in order to address complex tasks in a cross-sector and cross-functional manner. In projects, many stressful situation occur which may dominate the day-to-day work in the project: Interim results must be achieved, meeting a set timetable is difficult, and team meetings should be carried out in a structured manner. Not to forget the enormous time-bound pressure which finally decides about everything. Therefore, in-depth knowledge about the theoretical and practical foundations of planning and monitoring of complex projects is all the more important. Students will work on concrete project examples in an application-oriented fashion, in order to apply their theoretical basic knowledge to examples, e.g. to train the “management of research projects”.	1 WLH
Examination: Project work (max. 10 pages) **Examination prerequisites:** Participation in the seminar **Examination requirements:** Creating one’s own project idea.	3 C

Admission requirements: Membership in GRK 1666	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Bettina Roß
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**

Maximum number of students: 20	

Additional notes and regulations:
Every 4th semester; Winter semester

Georg-August-Universität Göttingen **Module P.GGG.0001: Academic writing and publishing: optimizing writing strategies for publishing in english**	2 C

Learning outcome, core skills: • deeper understanding of the writing process in the academic context • improvement of the ability to write and publish in English • knowledge of writing strategies • understanding of review processes	**Workload:** Attendance time: 0 h Self-study time: 60 h

Course: Academic writing and publishing: Optimizing writing strategies for publishing in English (Block course, Seminar) *Contents*: Writing has become an essential part of any researcher's life. Successfully pursuing an academic or professional career largely depends on writing well--at least well enough to get published and read! But what does "writing" really mean and what is considered "good writing"? And, what is special about publishing in English for an international readership? These questions are at the heart of this workshop, which is designed to address the specific needs of doctoral students. Its goal is to gain a deeper understanding of both the writing process in general and the specific requirements of writing in English in particular. Together, we will, first, analyze, discuss, and practice important strategies for writing sentences, paragraphs, and texts that meet the expectations of readers, reviewers, and editors alike. In a second step, we will analyze the components of the "classic" research paper and will look at ways to enhance your chance of getting your written paper published. Additionally, we will work with your own writing samples to sensitize you for the strengths and weaknesses of your texts, to develop criteria for good writing, and to help you overcome any obstacles or anxieties throughout the writing process	
Examination: Written reflection (Submit within two weeks after the course) **Examination requirements:** We will discuss your texts in the course and you are supposed to send the instructor a written reflection of this discussion within two weeks of the end of the course. Please note that the sole purpose of sending your work in progress is to get credit points, i.e. we will not be able to discuss (and I will not be able to give feedback on) any other texts!	2 C

Admission requirements: To be eligible, you need to mail the instructor a sample of your writing before the course starts.	**Recommended previous knowledge:** Good command of spoken English
Language: English	**Person responsible for module:** Frank Lauterbach
Course frequency: winter or summer semester, on demand	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 16	

Additional notes and regulations:
For further information and deadlines please check the homepage of the Göttingen Graduate School of Social Siences.

Georg-August-Universität Göttingen **Module P.HBS.01: Technical and methodological foundations**	4 C 4 WLH

Learning outcome, core skills: PhD students know the principles of the interdisciplinary usage of the subject “qualification-upgrading in SME” by handling different disciplinary accesses of the participating disciplines. They have a good overview of the exsisting research methods and can use these methodic skills for planning an interdisciplinary approach in their own PhD projects.	**Workload:** Attendance time: 64 h Self-study time: 56 h

Course: Labor division, demand for specialists and academization in KMU (Lecture) *Contents*: Lecture series on current research findings and methods of the related research topics. *Course frequency:* SoSe 2013 ggf. SoSe 2016	2 WLH
Examination: Learning report (max. 2 pages) **Examination requirements:** Knowledge of existing research methods and knowledge of the fundamentals of Treatment of the qualification- upgrading in SMEs.	2 C

Course: Seminar (Seminar) *Contents*: Lecture series on current research findings and methods in the field. *Course frequency:* each semester	2 WLH
Examination: Presentation (approx. 15 minutes) and written outline (max. 2 pages) **Examination requirements:** Presentation of their own thesis project as well as a discussion of thesis projects for PhD students participating in the seminar.	2 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kilian Bizer
Course frequency: See courses	**Duration:** 2 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.HBS.02: Learn and reflect on research**	11 C 10 WLH

Learning outcome, core skills: PhD students are able to develop their own doctoral project on the basis of disciplinary and interdisciplinary foundations. They should discuss their progress critically with the advisors and fellow students and adjust the project. PhD students are able to design the process of their doctoral project and scientific research in a targeted manner. They have the knowledge to conduct their projects on the basis of good scientific practice and social responsibility. PhD students are able to present the results of their research as a policy recommendation or scientific contribution at a policy-workshop or the college's conference and design and carry out the workshop or conference at the conceptual and organizational level.	**Workload:** Attendance time: 155 h Self-study time: 175 h

Course: Good scientific practice (Seminar) *Contents*: Foundations and application of the rules of good scientific practice. *Course frequency:* WS 2012/2013	1 WLH
Examination: Learning report (max. 2 pages) **Examination requirements:** Knowledge of the rules of good scientific practice.	1 C

Course: Social responsibility of science (Seminar) *Contents*: Seminar about the basics of social responsibility of science. *Course frequency:* WS 2013/2014	5 WLH
Examination: Learning report (max. 2 pages) **Examination requirements:** knowledge of the responsibility of the sciences towards society.	5 C

Course: Colloquium and advisement council (Exercise) *Contents*: Counseling talks, supervision agreement. *Course frequency:* SoSe 2013	2 WLH
Examination: Presentation (approx. 20 minutes) **Examination requirements:** Work planning and the development of problem solving competencies in counseling talks.	2 C

Course: Workshop or conference (Exercise) *Contents*: Conception, preparation and execution of a policy-practice-workshop or a conference for the doctoral college.	2 WLH

Course frequency: WS 14/15 bis SoSe 15	
Examination: Learning report (max. 2 pages) **Examination requirements:** Skills and knowledge to conceptualize, prepare and carry out a policy-practice-workshop or a conference	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Kilian Bizer
Course frequency: See courses	**Duration:** 6 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.HBS.03: Competencies in transition into employment**	4 C

Learning outcome, core skills: The PhD students prepare for different occupational fields within or outside of the university. They act in consultation with their advisors on choosing the competencies they need to obtain, by striving towards one or several occupational fields for academics (e.g. research and teaching, science management, companies, NGO, politics). In this way the students may combine the insight into different occupational fields and different providers.	**Workload:** Attendance time: 60 h Self-study time: 60 h

Course: Competencies in transition into employment (Seminar) *Contents*: Outline of different professions which are open to academics after finishing their doctorate.	
Examination: Written outline (max. 5 pages) oder learning report (max. 5 pages) **Examination requirements:** Academics know the different professions which are open to them upon obtaining their doctorate.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Bettina Roß
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.PA.E0200: Efficiency and productivity analysis 2- Stochastic Approaches**	3 C 2 WLH

Learning outcome, core skills: PhD students obtain a deeper understanding of the microeconomic foundations of productivity and efficiency analyses. They learn the econometric basis for stochastic frontier analysis and become familiarized with the underlying test theory. Furthermore, they obtain the ability to follow current literature on the topic. The students are able to conduct their own analyses employing the introduced methods.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Efficiency and productivity analysis 2- Stochastic Approaches (Lecture, Exercise) *Contents*: The module is designed to teach participants the economic and econometric concepts which form the basis of stochastic frontier analysis. The module furthermore focuses on the empirical application of the methods, which will be introduced on the basis of example data on the computer. The extensive discussion of current publications on efficiency and productivity analysis in the areas of agriculture and development rounds off the class.	2 WLH
Examination: Oral examination (approx. 30 minutes) **Examination requirements:** Knowledge of the microeconomic foundations of productivity and efficiency analysis. Solid knowledge of the econometrical basis of stochastic frontier analysis and the underlying test theory	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations: every 4th semester; Summer semester

Georg-August-Universität Göttingen **Module P.PA.E0300: Time series analysis: Applications in agricultural and food economics**	3 C 2 WLH

Learning outcome, core skills: The PhD students obtain a deeper understanding of time-series analysis forming the foundation of market integration and volatility analyses. They deepen their knowledge of the econometrical basis of time-series analysis and familiarize themselves with the underlying test theory. Furthermore, they gain the skills in order to follow current literature on the topic. The students are able to conduct analyses by themselves using the introduced methods.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Time series analysis: Applications in agricultural and food economics (Lecture, Exercise) *Contents*: The module intends to teach participants the important foundations of time-series analysis. While doing so, the focus will mainly be on market integration and volatility analyses. Another emphasis will be put on empirical application of the methods, which will be introduced on the basis of example data on the computer. The extensive discussion of current publications on the application of time-series analysis in the areas of agriculture and development rounds off the class.	2 WLH
Examination: Practical assessment (ca. 30 Min.) **Examination requirements:** Knowledge of the time-series analysis forming the foundation of market integration and volatility analysis. Deepened knowledge of the econometric foundations of time-series analysis and the underlying test theory.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations: Every 4th semester; Winter semester

Georg-August-Universität Göttingen **Module P.PA.SK2100: Scientific writing for agricultural economists**	3 C 2 WLH

Learning outcome, core skills: PhD students attain knowledge of the various journals in national and international agricultural economics. They are familiar with the steps and conventions of the peer-review-process from the perspectives of authors and reviewers. They know how to use the literature databases and literature search engines which are used in (agricultural) economics. They understand how a journal article should be structured. They are thus capable of presenting their own research results in a manuscript, identifying suitable journals to which they can submit their manuscript, and undergo all the steps of the reviewing process through to publication.	**Workload:** Attendance time: 20 h Self-study time: 70 h

Course: Scientific writing for agricultural economists (Lecture, Seminar) *Contents*: Introduction to the writing of articles for peer-review scientific journals in agricultural economics.	2 WLH
Examination: Homework (max. 2 pages) **Examination requirements:** Very good knowledge of the peer review journals in agricultural economics, the literature databases which are widely used in agricultural economics, and how they can be used. Understanding of the Impact Factor and how it is to be interpreted, how the peer review process works and whatis expected of authors and reviewers at various stages of this process.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: once	**Recommended semester:**
Maximum number of students: 50	

Georg-August-Universität Göttingen **Module P.PA.T2200: Advanced Supply Chain Management**	6 C 2 WLH

Learning outcome, core skills: Die PhD-Studierenden erlangen ein tieferes Verständnis wesentlicher betriebswirtschaftlicher Fragen des Supply Chain Management. Sie erweitern ihr theoretisches Wissen und sind in der Lage, selbstständig die wichtigsten Konzepte, Methoden und inhaltlichen Aussagen eines Fachbeitrags zu erarbeiten, schriftlich wiederzugeben und vorzutragen. Die PhD-Studierenden erlangen wichtiges theoretisches Wissen, das ihnen bei der Konzeption ihrer empirischen Untersuchungen wie auch bei der Interpretation und Diskussion ihrer Untersuchungsergebnisse helfen wird.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Advanced Supply Chain Management (Seminar) *Contents*: Wertschöpfungsketten (Supply Chains) sind ein Teil der dominierenden Logik der Organisation von Material- und Informationsfüssen in der globalen Land- und Ernährungswirtschaft. Große Teile der Literatur zum Supply Chain Management basieren auf Organisationstheorien und Theorien des strategischen Managements. Anhand ausgewählter Fachbeiträge aus der internationalen Literatur werden die PhD-Studierenden mit vertieften Fragen und theoretischen Konzepten des Supply Chain Management vertraut gemacht. Schwerpunkte sind organisationstheoretisch geprägte Beiträge sowie Literatur aus dem Bereich des strategischen Managements. Die PhD-Studierenden erarbeiten selbst die wesentlichen Konzepte, Methoden und Aussagen sowie ggf. empirische Ergebnisse eines einschlägigen, wegweisenden Beitrags.	2 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Hinweis zum Leistungsnachweis: Präsentation, Referat (ca. 20 Minuten allein oder 30 Minuten gesamt in 2-3er Gruppe) und Diskussion müssen zur Erlangung von 3 C sowohl vorbereit als auch selbst präsentiert werden. Zur Erlangung der 6 C muss ein vollständiges Manuskript mit mindestens 5.000 Wörtern (Keywords, Abstract, Literaturverzeichnis und Anhang nicht eingerechnet) dem Modulverantwortlichen zur Prüfung eingereicht werden, zusammen mit einem Anschreiben von der Erstbetreuer/in, das entweder die Annahme bei einem double-blind-peer-review-Journal oder die Einreich-fertigkeit für ein solches bestätigt. Inhaltlich muss dieses Manuskript schwerpunktmäßig auf mindestens einer der in den Prüfungsanforderungen genannten Theorien aufgebaut sein. Das Modul kann entweder mit 3 C oder mit 6 C abgeschlossen werden. **Prüfungsanforderungen:** Kenntnisse der theoretischen und methodischen Konzepte, der Begriffe und der Forschungsmethoden des Supply Chain Management auf Grundlage von Beiträgen der	6 C

Organisationstheorie und des strategischen Managements. Folgende Theorien werden im Modul selektiv behandelt und im Rahmen des eingereichten Manuskripts anerkannt:

- Contingency Theory basierend auf Lawrence and Lawrence (1967),
- Stakeholder Management Approach basierend auf Freeman (1984) and Mitchell (1997) oder ähnliche Studien,
- Resource Dependence Theory,
- Resource Based View,
- „Five Forces“ und Competitive Strategy mit Bezug auf Porter (1980),
- Transaction Cost Theory basierend auf Williamson (1985),
- Theory of Bureaucracy,
- Principle-Agent-Theory,
- Property-Rights-Theory,
- Power Concept mit Bezug auf Mintzberg (1983),
- Cooperative Models basierend auf Chaddad &Cook (2004) oder ähnliche Studien,
- Industry Concentration Concepts basierend auf Tremblay &Tremblay (2012) oder ähnliche Studien,
- Performance Measurement Aramyan et al. (2006) oder ähnliche Studien; ähnliche Studien nach vorheriger Rücksprache.

Admission requirements: Mitgliedschaft im Promotionsprogramm IPAG, PAG oder Agrarökonomik, weitere Programme nach Rücksprache	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Ludwig Theuvsen
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.SFS.CC01: Sustainable food systems: Perspectives from various scientific disciplines**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students understand the main sustainability issues of food systems in high-, middle, and low-income countries and related trends and challenges. They are familiar with the effects of food production, trade, and consumption on human health and planetary health and recognize synergies and tradeoffs from multidisciplinary perspectives.	Attendance time: 28 h Self-study time: 62 h

Course: Sustainable food systems: Perspectives from various scientific disciplines (Lecture, Seminar) *Contents*: This module familiarizes students with the latest thinking in food systems research, focusing on links between agriculture, nutrition, health, climate, the environment, and other dimensions of economic and social sustainability. The course will be co-taught by lecturers from different disciplines, helping students to develop an integrated food systems lens and better understand how their own research work fits into the bigger global picture.	2 WLH
Examination: Written essay, 10 pages max. (70%) and oral presentation, approx. 20 minutes (30%) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Links between food systems and Sustainable Development Goals (SDGs).	3 C

Admission requirements:	**Recommended previous knowledge:**
Completed Master's Programme in areas relevant to sustainable food systems	Familiarity with general issues of sustainable development
Language: English	**Person responsible for module:** Prof. Dr. Matin Qaim
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.CC02: Experimental and econometric approaches for food systems analysis**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students are able to assess the main empirical (experimental and econometric) approaches that can be used to study food systems related questions using primary or secondary data. They have a basic familiarity with statistical software and are able to plan an experiment/carry out an econometric analysis on their own.	Attendance time: 28 h Self-study time: 62 h

Course: Experimental and econometric approaches for food systems analysis (Lecture) *Contents*: This module familiarizes students with empirical research methods for food systems research. The course consists of four components: The first part will cover the design and analysis of randomized controlled trials. The second part will review quasi-experimental methods, including matching, difference-in-difference, instrumental variables, and regression discontinuity designs. The third part will discuss the design, implementation and analysis of data from lab and lab-in-the-field experiments, whereas the fourth part will introduce regression-based modelling of consumption choices. In all parts, the methods will be discussed in the context of applications from food systems research. The course will be co-taught by lecturers from different disciplines. *Course frequency:* WiSe (irregular, according to RTG cohorts)	2 WLH
Examination: Hand-in of four take-home exercise sheets (max. 5 pages each, 100%) **Examination requirements:** Understanding of experimental and econometric approaches for food systems analysis.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with basic statistical/econometric methods.
Language: English	**Person responsible for module:** Prof. Dr. Krisztina Kis-Katos
Course frequency: WiSe (irregular, according to RTG cohorts)	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.CC03: Interdisciplinary Research Methods for Food Systems Analysis**	3 C 2 WLH

Learning outcome, core skills: Students gain an overview of interdisciplinary methods and metrics to assess food systems performance. They are familiar with selected methods and approaches, e.g., food security and nutrition metrics, ecosystem services and related economic valuation methods, analysis of economic-ecological tradeoffs, scenario development, and lab-in-the-field experiments to analyze producer and consumer preferences. Students understand how these approaches can be applied in the context of food systems analysis and how to interpret the generated results.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Interdisciplinary Research Methods for Food Systems Analysis (Lecture, Seminar) *Contents*: This module provides an overview of interdisciplinary methods and metrics for food systems analysis. Selected methods are introduced in keynote lectures held by lecturers from different disciplines. Lectures are complemented with practical exercises, in which students work in groups to deepen their knowledge on selected methods. The results of the group work are presented and discussed in class.	2 WLH
Examination: Oral examinationoral presentation, approx. 30 minutes (approx. 30 minutes) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Application of selected interdisciplinary methods to address issues in the context of food systems analysis.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with basic statistical methods
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency: each winter semester	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.CC04: Transdisciplinary approaches to sustainable food systems**	3 C 2 WLH

Learning outcome, core skills: After completing this module students will comprehend the fundaments of transdisciplinary approaches to sustainable food systems. They are familiar with concepts of sustainability science, for example planetary boundaries and social-ecological systems. They are also able to design and implement participatory research processes.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Transdisciplinary approaches to sustainable food systems (Lecture, Seminar) *Contents*: This module will introduce doctoral researchers to transdisciplinary concepts and methods that facilitate understanding of the global connections and sustainability tradeoffs of food systems. In the first part, the course will teach systems-based concepts of central importance for the understanding of sustainable food systems. In the second part, transdisciplinary methods to integrate diverse disciplinary data and approaches will be highlighted.	2 WLH

Examination: Written essay, 10 pages max. (70%) and oral presentation, approx. 20 minutes (30%). **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Profound understanding of transdisciplinary approaches in sustainability science and awareness of the role of these approaches in students' PhD research.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with general issues of sustainable development
Language: English	**Person responsible for module:** Prof. Dr. Tobias Plieninger
Course frequency: each summer semester	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:** from 2
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.CC05: Good Scientific Practice**	3 C 2 WLH

Learning outcome, core skills: Students understand the most common research ethics guidelines and the DFG principles of good scientific practice. They can develop a study protocol and a concept for data handling for applications to institutional review board / ethics committees. They are also able to serve as reviewer for such applications.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Good Scientific Practice (Lecture, Seminar) *Contents*: This module will cover principles of research ethics, collection, handling, and storage of research data, research involving human subjects, scientific cooperation, conflict of interest, and misconduct, among others. It will cover the most important ethics guidelines and the DFG principles of good scientific practices. It will include both theoretical and practical components.	2 WLH

Examination: Application to an institution review board / ethics committee for a project, max. 15 pages (70%), review of another application, max. 2 pages (30%) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Understanding of most common research ethics guidelines and the DFG principles of good scientific practice.	3 C

Admission requirements: Admission to the RTG 2654	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: each summer semester	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.CC07: Doctoral seminar on sustainable food systems**	3 C 1 WLH

Learning outcome, core skills: Students can effectively present their research ideas and results on topics related to sustainable food systems and engage in meaningful scientific discussion on research methods and contents. Students are able to critically comment on the work of others.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Doctoral seminar on sustainable food systems (Seminar) *Contents*: In this seminar, students present their own doctoral research proposals and papers and get critical feedback from other participants. Students also comment on the papers and presentations of others and actively participate in seminar discussions.	1 WLH

Examination: Written paper, 30 pages max. (70%), oral presentation, approx. 20 minutes (30%) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Profound understanding of own research topics and methods and ability to identify own contributions to the broader research field.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with relevant research methods
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency: each summer semester; Annually during three-year PhD Program	**Duration:** min. 2
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC01: Advanced Theories of Consumer Research**	3 C 2 WLH

Learning outcome, core skills: Students get an overview about advanced theories of consumer research und develop an understanding for asking profound research questions und for newer development in the field. Theses skills allow them to apply hypotheses formulation and testing and to develop adequate research frameworks and methods.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Advanced Theories of Consumer Research (Seminar) *Contents*: In this seminar, students hear interactive lectures on consumer research in different fields and learn about selected theories of consumer research. In addition, the application of such theories using hypothesis testing with structural equation models and latent class analyses are part of the course.	2 WLH

Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Oral presentation of a selected research paper published in a peer-reviewed journal that uses a theory of consumer behavior. The paper should be presented and critically reflected.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with relevant research methods
Language: English	**Person responsible for module:** Prof. Dr. Achim Spiller Dr. Gesa Busch
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC02: Applied microeconometrics**	3 C 2 WLH

Learning outcome, core skills: Students learn the basic logics behind each econometric model, understand the tests for model specification, and appropriately explain the model outputs in connection to economic theories.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Applied microeconometrics (Lecture) *Contents*: This course mainly teaches how to correctly apply basic econometric models to studying specific research questions for master level students in agricultural economics, agribusiness, and related programs at the University of Goettingen. The main software package used in this course will be R. *Course frequency:* irregular	2 WLH

Examination: Written examination (120 minutes) **Examination requirements:** It is recommended to read the discussed papers in advance. Understanding the microeconometric models taught in the class and apply Stata to the topics discussed in the class.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with basic statistical/econometric methods.
Language: English	**Person responsible for module:** Prof. Xiaohua Yu
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC03: Applied time series analysis**	3 C 2 WLH

Learning outcome, core skills: The objective of this course is bridge the gap between standard introductory econometrics at the MSc level and modern time series techniques as used in concurrent publications in the AgEcon literature by presenting some theoretical background of these methods and illustrating applications in agricultural economics in order to enable participating PhD students to apply these tools in their research.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Applied time series analysis (Lecture, Seminar) *Contents*: Modern tools in time series analysis have become increasingly popular over the last decades in agricultural economics and rural development studies. This course will give an overview of the methods in these fields from an applied econometrics perspective. The significance and the advances in these fields have recently found their peak in honoring the work of the two most known researchers in time series analysis, namely Robert F. Engle and Clive W. Granger, by the Nobel Prize Committee in 2003. Teaching method include a block course of lectures and hands-on software practice. *Course frequency:* Every Second Summer Semester	2 WLH
Examination: Oral Presentation (approx. 45 minutes) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Understanding time series applications in the AgEcon literature; application of econometric toolbox to AgEcon time series data. Presentation of practical application in the tutorial including interpretation of results and moderating the subsequent discussion.	3 C

Admission requirements: none	**Recommended previous knowledge:** Intermediate econometrics
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: Every Second Summer Semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC04: Consumer behavior and demand analysis: Theory and applications**	3 C 2 WLH

Learning outcome, core skills: Students learn the basic logics behind each econometric model, understand the tests for model specification, and appropriately explain the model outputs in connection to economic theories for consumer and demand analysis.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Consumer behavior and demand analysis: Theory and applications (Lecture) *Contents*: This course helps understand the fundamental economic theory of consumer behaviors and practice demand analysis. This course includes two parts: Part I introduces the basic theory and Part II applies the theory to demand analysis using data from developing countries. After a brief review of the basic theory, this course will focus on econometric models for demand analysis, extension of basic theories, estimation of demand for nutrition. *Course frequency:* irregular	2 WLH
Examination: Written examination (120 minutes) **Examination requirements:** It ist recommended to read the discussed papers in advance. Understanding theories for consumer behavior and their applications to demand models for food analysis.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with basic statistical/econometric methods with R and Stata.
Language: English	**Person responsible for module:** Prof. Xiaohua Yu
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC05: Consumer Science & Public Policy**	3 C 2 WLH

Learning outcome, core skills: After successful attendance the students should understand the public policy implications of consumer behavior. Moreover, they should be able to craft concrete policy suggestions based on recent consumer research. In addition to understanding how consumer research can be linked with public policy initiatives, course participants will learn how to craft concrete policy suggestions themselves based on recent consumer research. Crafting policy suggestions also includes the identification of areas of application to which specific research findings can be transferred.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Consumer Science & Public Policy (Lecture, Seminar) *Contents*: The course consists of two parts, a lecture and a term paper. In the lecture, students are introduced to various topics where consumer research has policy implications. These topics include, but are not limited to: • Introduction to consumer science & public policy • Transformative consumer research • Nutrition and health • Consumer vulnerability and protection • Marketplace morality: ethics and social responsibility The term paper will contain a summary of selected research on a given topic (consumer science part). Moreover, participants are expected to critically discuss current policies in the area and to formulate additional public policy implications. The papers will be presented in class. *Course frequency:* Summer Term, irregular	2 WLH
Examination: Written essay, 10 pages max. (70%) and oral presentation, approx. 20 minutes (30%) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Health marketing, food marketing, ethics, consumer protection, transformative consumer research.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with general issues of consumer behavior
Language: English	**Person responsible for module:** Prof. Dr. Yasemin Boztug
Course frequency: Summer Term, irregular	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC06: Efficiency and productivity analysis**	3 C 2 WLH

Learning outcome, core skills: The learning objectives address both conceptual and methodological issues. It will be designed to bridge the gap between theory and practice in efficiency and productivity analysis. To accomplish this objective, theory and method sessions will be followed by concrete examples of empirical applications and practical exercises. Students will understand the underlying theory and become familiar with the software to initiate their own research project using parametric approaches to modeling efficiency and productivity.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Efficiency and productivity analysis (Lecture, Seminar) *Contents*: The course on stochastic approaches to efficiency and productivity analysis will introduce the participants to economic analytical concepts and specifications of a set of econometric frontier models and their concrete applications. The stochastic frontier approach will constitute the core of the course. This approach coupled with the microeconomic theory of the firm provides firm-specific measurement of efficiency and best-practice role models for improving performance.	2 WLH
Examination: Oral Presentation (approx. 45 minutes) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Understanding microeconomic foundations of efficiency and productivity analysis, ability to apply econometric toolbox, and interpret results. Presentation of practical application in the tutorial including interpretation of results and moderating the subsequent discussion.	3 C

Admission requirements: none	**Recommended previous knowledge:** Intermediate econometrics, microeconomics
Language: English	**Person responsible for module:** Prof. Dr. Bernhard Brümmer
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC07: Global Health**	3 C 2 WLH

Learning outcome, core skills: The goal of this course is to provide students with a comprehensive understanding of global health. By the end of the course, students will be able to explain the main concepts of global health. They can describe linkages between health and economic development and describe determinants of health and different components of health systems. Students will be familiar with the concept of burden of disease and with risk factors and how the health status is measured. They can describe key measures to address the burden of disease in cost-effective ways. They can read, discuss and present recent scientific literature in the global health field and write a clear and concise policy brief tailored to a specific audience.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Global Health (Lecture, Seminar) *Contents*: The course will introduce students to the main concepts of the public health field and critical links between global health and economic development. Students will get an overview of the determinants of health and learn how health status is measured. The course will be global in coverage, but with a focus on low- and middle-income countries and on the health of the poor. The course will cover: • Global health concepts • Linkages between health and development • Global burden of disease, measurement and global trends • Determinants of health and social network effects • Health disparities • Health systems • Global health efforts • Health behaviour in developing countries	2 WLH
Examination: Written essay, 10 pages max. (70%) and oral presentation, approx. 20 minutes (30%) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Students will gain an understanding of the relevant global health concepts and an ability to formulate adequate policy recommendations.	3 C

Admission requirements: Admission to the RTG 2654	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Sebastian Vollmer
Course frequency: each summer semester	**Duration:** 1 semester[s]

Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC08: Market Integration and Price Transmission**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Doctoral students have read key articles in the literature on market integration and price transmission and understand the theories and methods employed in these articles. Students are able to identify open questions and research topics in this topic area, and to design and carry out corresponding research projects. They are in a position to discuss topics in market integration and price transmission with other experts and to present their own results to specialists in seminars and at conferences.	Attendance time: 28 h Self-study time: 62 h

Course: Market Integration and Price Transmission (Lecture, Seminar) *Contents*: Theory and empirical analysis of agricultural market integration. Regarding vertical price transmission, the module introduces a simple model of the farm-retail price spread, empirical applications, the effect of market power on vertical price transmission, asymmetric price transmission, and the analysis of retail prices. Regarding horizontal or spatial price transmission, the module introduces a simple model of spatial equilibrium, empirical applications, accounting for transaction costs in spatial trade, and the effects of temporal and spatial data aggregation. The module is a reading course for advanced students. *Course frequency:* Every Second Summer Semester	2 WLH
Examination: Presentation (approx. 20 minutes, 50%) and oral examination (approx. 20 minutes, 50%). **Examination requirements:** Knowledge and understanding of received methods in empirical price transmission analysis and the ability to understand and interpret journal articles in the area of market integration and price transmission. Reading the assigned articles before class and actively participating in the discussions is recommended.	3 C

Admission requirements:	**Recommended previous knowledge:**
none	Intermediate econometrics
Language: English	**Person responsible for module:** Prof. Dr. Stephan von Cramon-Taubadel
Course frequency: Every Second Summer Semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC09: Micro-macro linkages in development economics**	3 C 2 WLH

Learning outcome, core skills: Students are able to apply various quasi-experimental methods of econometrics to link macro processes to outcomes measured at the micro level (consumption, labor market, health and other social outcomes) within the context of development economics research.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Micro-macro linkages in development economics (Lecture) *Contents*: This module provides a technical introduction to shift-share approaches in econometrics and also touches upon other quasi experimental methods used for causal identification. The goal is to understand how to causally link macro processes (like trade liberalization, migration, FDI, global aid flows, etc.) to micro-level outcomes relying on spatio-temporal variation in the exposure to macro shocks or policy changes. Beyond focusing on econometric techniques, the lectures will also discuss recent research papers that apply shift-share and related methodology. The take-home problem sets will require partial re-estimation of the discussed papers and/or the development of own shift-share ideas. *Course frequency:* irregular	2 WLH
Examination: Hand-in of four take-home problem sets (max. 20 pages in total) **Examination requirements:** It is recommend to read the discussed papers in advance. Understanding of shift-share approaches and other quasi-experimental methods for causal identification.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with basic statistical/econometric methods; PhD module in RTG 2654 P.SFS.CC02.
Language: English	**Person responsible for module:** Prof. Dr. Krisztina Kis-Katos
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC10: Public controversies over food science and technology**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
Students understand the typical dynamics and mechanisms underlying public controversies over food science and technology. They are familiar with content production, media usage, message reach and distribution as well as with media perceptions and effects in controversies over food science and technologies in digital high-choice media environments.	Attendance time: 28 h Self-study time: 62 h

Course: Public controversies over food science and technology (Lecture, Seminar) *Contents*: This module familiarizes students with the latest research on the dynamics of public controversies over food science and technology. The course will include units on news audiences, journalism, stakeholder communication as well as media effects on individuals and public opinion formation in societal debates over food science and technologies. These topics will be looked at in international comparison doing justice do different media systems and journalism cultures.	2 WLH
Examination: Written essay, 10 pages max. (70%) and oral presentation, approx. 20 minutes (30%) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Give theoretical explanations for observable patterns in ongoing controversies over food science and technologies.	3 C

Admission requirements:	**Recommended previous knowledge:**
Completed Master's Programme in areas relevant to sustainable food systems	none
Language: English	**Person responsible for module:** Prof. Dr. Senja Post
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SFS.EC11: Risk analysis and risk management in agriculture**	3 C 2 WLH

Learning outcome, core skills: The Ph.D. students acquire the methodological tools for measuring, analyzing and managing risks on farms. They are able to identify the problems, which can occur in individual case and are able to apply appropriate techniques to solve the problem. They gain methodological competences for their own research work.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Risk analysis and risk management in agriculture (Lecture) *Contents*: The focus of this module is on risk measurement, risk analysis and risk management. The topics include distributions and stochastic processes, value-at-risk-concept, risk programming approaches, insurances, valuation of derivatives including weather derivative. *Course frequency:* irregular	2 WLH
Examination: 2 assignments (max. 5 pages each) **Examination prerequisites:** Regular attendance and participation in seminar sessions **Examination requirements:** Understanding of expected utility theory, pricing of derivatives, stochastic processes, innovative risk management instruments, real options approach.	3 C

Admission requirements: Completed Master's Programme in areas relevant to sustainable food systems	**Recommended previous knowledge:** Familiarity with MS-EXCEL and basic stochastic models.
Language: English	**Person responsible for module:** Prof. Dr. Oliver Mußhoff
Course frequency: irregular	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.SFS.EC12: Topics in Rural Development Economics**	3 C 2 WLH

Learning outcome, core skills: The objective of this course is to acquaint students with the reading and understanding of scientific journal articles on relevant topics of rural development economics. Students should learn how to develop a scientific research question, choose appropriate research methods and structure a scientific article.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Topics in Rural Development Economics (Lecture, Seminar) *Contents*: This course will provide students with an overview of relevant topics in rural development economics, which will also enable them to develop own research questions and study approaches in this field. The module is structured as a reading course, building on selected articles from relevant international journals. Students are required to read announced articles before the classroom sessions, in order to enable a critical debate in class. The articles selected for the course are clustered around key topics relevant to rural development economics, such as listed below. Tentative Topics: 1. The food system transformation and smallholder farmers 2. Rural livelihood strategies and income diversification 3. Adoption and impact of modern agricultural technology 4. Economics of nutrition and health 5. Gender and intra-household resource allocation	2 WLH
Examination: Oral Presentation (approx. 45 minutes) **Examination requirements:** Reading the assigned articles before class and actively participating in the discussions is recommended. Identifying the main messages and methodological aspects of a scientific article. Presentation of a scientific article in class and moderating the subsequent discussion.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 40	

Georg-August-Universität Göttingen **Module P.SFS.PS01: Professional skills**	3 C 3 WLH

Learning outcome, core skills: 3 out of 6 Seminars have to be chosen. **Intercultural communication**: The aim of the course is to enhance the knowledge about constructive collaboration in international groups. The participants will learn to reflect on their own learned communication patterns, to recognize obstructive behavior and to replace it with constructive alternatives, thus strengthening cooperation. This serves to prevent conflicts – e.g. by avoiding misunderstandings – and it also strengthens a confident, positive handling of existing differences. **Gender and Diversity**: The aim of the course is to enhance the knowledge about gender equality and diversity questions. Participants gain knowledge and leadership in an important and sensitive field of discussion. They learn how to achieve higher performance when taking gender equality and diversity into account. Participants will better understand conflict-dynamics, how to avoid them, how to address them, and how to solve them. They understand the potential that rests in establishing an engaged, open and inspiring working culture, thus enabling excellence in research and science. **Presentation Skills**: The aim of the course is to improve the knowledge regarding giving scientific presentations and taking part in academic discussions. Participants will develop a solid foundation of effective presentation strategies, learn how to prepare for talks and poster presentations, and how to improve own presentation skills. **Science communication**: Participants will learn how to communicate their research and results to the broader audience. They gain an overview of the main components and tools in science communication. **Change management**: Participants will understand the dynamic of change processes, related to the team, the organizational, and the society. They understand the principles of resistance, get to know leadership approaches towards change, and learn methods to deal with resistance and implement change. A focus will be on the difficulties to work successfully across cultures and genders as an example of such a change process in research institutions such as universities. **Career development and job market skills**: The participants have an overview about current methods in job applications in the international context. The focus is on applications for international organizations and institutions in the field of sustainable food systems, for NGO's, and for the private sector. Methods and ways in describing individual strengths and competencies in the CV will be explained and experienced. Participants do active exercises like mock-interviews as used in assessment procedures in the international context.	**Workload:** Attendance time: 42 h Self-study time: 48 h

Course: Intercultural communication (Seminar) *Contents*: The focus of this course is to understand that doing a doctorate or working within an international group of researchers is certainly both inspiring and supportive on the one hand and challenging on the other hand. The different cultural backgrounds and imprints	1 WLH

of the group members can harbor additional potential for conflict. The workshop will contain: • Learning the basics of Marshall Rosenberg's communication approach • Diversity aspects including gender & intercultural aspects in communication • Mindful cooperation between different and within groups such women and men, international groups, and other aspects of diversity • Applications through role plays and a the use of a "tool-box" suitable for everyday use.	
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance and participation in seminar **Examination requirements:** Recognition of gender stereotypes and other conflict-prone "labels" and ways to dissolve them.	1 C

Course: Gender and Diversity (Seminar) *Contents*: Nurturing gender and diversity competences and creating awareness for existing gender roles and constraints among both men and women are important steps towards gender equality and female empowerment as well as diversity and and establishing a welcoming culture. Topics will include • Status Quo: Effects of a lack of gender equality and diversity in research • Gender and diversity management: Chances and risks • How to develop gender and diversity competences • How to become agents of change	1 WLH
Examination: Oral Presentation (approx. 30 minutes) **Examination requirements:** Understand conflict-dynamics, how to avoid them, how to address them, and how to solve them.	1 C

Course: Presentation Skills (Seminar) *Contents*: The focus of this course is: • How to better transport the message (storyline, pictures, argumentation) • How to improve presentation style • How to improve slides • How to structure a poster • Practice the talk	1 WLH
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance and participation in seminar **Examination requirements:** Preparation for scientific presentations.	1 C

Course: Science communication (Seminar)	1 WLH

Contents: The focus of this course is: • Tools to successfully communicate research • Useful tips and common mistakes • How to make a good story • Working with journalists and the press	
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance and participation in seminar **Examination requirements:** Successfully communication for research.	1 C

Course: Change management (Seminar) *Contents*: The focus of this course is: • Leadership in times of change • Learning organizations • Individual resistance • Team and organizational dynamics • Implementing and managing change	1 WLH
Examination: Oral Presentation (approx. 30 minutes) **Examination prerequisites:** Regular attendance and participation in seminar **Examination requirements:** Understanding how to deal with change and build resilience.	1 C

Course: Career development and job market skills (Seminar) *Contents*: The focus of this course is: • Characteristics of application- and recruitment procedures within International Organizations, NGOs and in the private sector • How to read a job description? • How to show competencies in my CV? • How to demonstrate the right motivation for the position in question? • How to structure a "Letter of Motivation" for International Organizations, NGOs and in the private sector? • Elevator pitch presentations, competency-based interviews and multi-modal interviews, assessment center, etc.	1 WLH
Examination: Oral Presentation (approx. 15 minutes, 80%) and writing sample (max. 3 pages, 20%) **Examination prerequisites:** Regular attendance and participation in seminar **Examination requirements:** Preparing a good application and interview.	1 C

Admission requirements: Membership in RTG 2654	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Meike Wollni
Course frequency: irregular	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.SPS.01: Introduction to mixed models and spatial statistics**	8 C 8 WLH

Learning outcome, core skills: In this module, PhD students obtain profound knowledge of methods relevant for mixed models and spatial statistics. PhD students who already have deepened knowledge in this area from their masters or diploma program conduct at least one of the exercises and thereby refresh and expand their knowledge of statistical fundamentals and communicate them to PhD students of various scientific backgrounds. The PhD students know the important mathematical foundations and methods of statistical model formation, statistical data analysis and prediction. Furthermore, they receive a good overview over the existing methods and are able to apply this methodical competence in the planning of their own PhD project and interdisciplinary cooperation.	**Workload:** Attendance time: 170 h Self-study time: 70 h

Course: Introduction to Mixed Models (Lecture, Exercise) *Contents*: repetition of the multiple regression model (estimation and inference, modeling of categorical and metric influencing variables, model diagnosis, model choice), extensions for not normally distributed targets, regression models with random effects	4 WLH
Course: Introduction to Spatial Statistics (Lecture, Exercise) *Contents*: Spatial interpolation, spatial smoothing methods, spatial processes for regional data, spatial point processes, incorporation of spatial effects in regression models	4 WLH
Examination: Written assessment (120 minutes) or oral (approx. 30 minutes) or presentation (approx. 30 minutes) **Examination requirements:** The students demonstrate that they are familiar with the basic ideas and characteristics of mixed regression models and spatial statistics. They are able to use them in practical data analyses. The students are able to apply mixed models and methods of spatial statistics with the help of statistical software, as well as to interpret the respective results in terms of their content.	8 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: WS 13/14 ggf. WS 16/17	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SPS.02: Advances in spatial statistics**	4 C 4 WLH

Learning outcome, core skills: The PhD students receive deepened methodological knowledge in the area of spatial statistics. They learn how to conduct scientific analyses by means of spatial statistics and the appropriate software (R, Programita).	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Advances in spatial statistics (Lecture, Exercise) *Contents*: Intensity function of point patterns, g- and O-function, mark correlation function, inhomogenity, null models, Monte Carlo simulations and point processes, data collection, analysis of own and/or example datasets	4 WLH
Examination: Written assessment (90 Minuten) or oral (approx. 20 minutes) or presentation (approx. 20 minutes) **Examination requirements:** The students show a deepened understanding of methods and estimators in advanced spatial statistics, especially for spatial point processes. They know the basic characteristics of the developed methods and are able to apply these in practical analyses.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kerstin Wiegand
Course frequency: SoSe 2014 ggf. SoSe 2017	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SPS.03: Generalized regression**	4 C 4 WLH

Learning outcome, core skills: The PhD students obtain deepened knowledge in the area of regression. They learn the necessary methodological foundations and are introduced to the implementation of these methods in statistical software.	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: Smoothing and mixed models (Lecture, Exercise) *Contents*: Generalized linear models (binary regression models, Poisson regression, exponential families, iterative weighted least squares estimation, maximum-likelihood estimation, hypothesis tests, confidence intervals, model choice and model checking, categorical regression models), non-parametric smoothing methods (penalized spline estimation, local smoothing methods, general characteristics of scatterplot smoothers, bivariate and spatial smoothing, generalized additive models)	4 WLH
Examination: Presentation (approx. 12 minutes) or oral (approx. 20 minutes) or written assessment (90 minuten) **Examination requirements:** The students show that they are able to choose methods of generalized regression, adapt them to given data and interpret the respective results. They demonstrate a general understanding of the developed methods and their interpretation and are able to apply them in statistical software	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: SoSe 2014 ggf. SoSe 2017	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SPS.04: Colloquium and research seminar**	6 C 4 WLH

Learning outcome, core skills: The PhD students • become familiarized with current research approaches and methods relevant for different fields of work, as well as the handling of challenges connected to the practical realization of research projects • critically assess the research of other scientists • actively participate in expert discussions	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Colloquium GRK 1644 (Seminar) *Contents*: In the colloquium, experienced (guest) scientists present relevant research work on scaling problems which will be intensely discussed. The colloquium will be held around five times in the semester upon agreement.	2 WLH
Examination: Oral examination (approx. 10 minutes) **Examination requirements:** Knowledge of the presented research work, critical assessment of approaches from neighboring disciplines	2 C

Course: Disciplinary research seminar (Seminar) *Contents*: The research seminars focus on questions related to the research projects presented in the GRK 1644 colloquium. Each research seminar is held by 3 to 4 scientists who take part in the GRK 1644.	2 WLH
Examination: 2x Presentations (approx. 20 minutes) **Examination requirements:** Knowledge of the research projects presented in the GRK 1644.	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: each semester	**Duration:** mehrere S.
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Additional notes and regulations:
PhD Students taking the course "Disciplinary research seminar" have to participate in two research seminars and have to hold a presentation in each of them.

Georg-August-Universität Göttingen **Module P.SPS.05: Conferences and summer schools**	4 C

Learning outcome, core skills: The PhD students are able to • focus on their research project on the basis of their disciplinary and interdisciplinary foundations • present the results of their research in a systematic manner and discuss them with national and international colleagues from the field as well as from other disciplines • critically evaluate their own research project in the interdisciplinary discourse • present interdisciplinary methods and results from other projects of the GRK	**Workload:** Attendance time: 0 h Self-study time: 120 h

Course: Conferences and summer schools *Contents*: Active participation (presentation or poster) in at least two conferences and two internal summer schools of the GRK 1644	
Examination: Presentation (approx. 30 minutes) **Examination requirements:** Knowledge of one's own research project and knowledge of the presentation of results at conferences and internal summer schools	4 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: each semester	**Duration:** Several Sem.
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.SPS.06: Diversity competence and good scientific practice**	2 C 2 WLH

Learning outcome, core skills: The PhD students understand the relevance of diversity in regards to gender, scientific disciplinarity and cultural origin. They transfer the conveyed knowledge to their own (scientific) practice and are able to make positive use of the heterogeneity of their work environment. The module teaches the PhD students specific knowledge of research ethics and provides a space in which they may reflect upon their values and attitudes as scientists. Students should practice their skills in dealing with conflict situations in their research practice.	**Workload:** Attendance time: 28 h Self-study time: 32 h

Course: Good scientific practice (Seminar) *Contents*: Good scientific practice, scientific misconduct, data management, authorship and publication, consultation, conflicts of interest and scientific cooperation, handling of scientific misconduct, resources of good scientific practice *Course frequency:* WS 17/18	1 WLH
Examination: Presentation (approx. 10 minutes) **Examination requirements:** Short talk on own understanding and realization of university specific guidelines on good scientific practice, as well as presentation of the group work on example cases	1 C

Course: Diversity competence (Seminar) *Contents*: What is diversity, analysis of diversity. Opportunities and risks of diversity. Formation of diversity competence. Particularities of heterogeneous (research) teams. *Course frequency:* 2017	1 WLH
Examination: Presentation (approx. 10 minutes) **Examination requirements:** Short presentation and assignments with gender- and diversity-specific content from the students' own range of experience	1 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: See courses	**Duration:** 2 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 25	

Georg-August-Universität Göttingen **Module P.STL.0001: Erschließung und Einsatz alternativer Proteinquellen in der Tier- und Humanernährung**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden erlernen in dem interdisziplinär ausgerichteten Modul basierend auf dem aktuellen Fachwissen grundlegende Schlüssel-kompetenzen, wie die Fähigkeit zur Analyse und Bewertung alternativer Proteinquellen. Darüber hinaus werden u.a. durch die Präsentation und die aktive Mitarbeit in dem Blockmodul instrumentale, systematische und kommunikative Kompetenzen gestärkt.	**Workload:** Attendance time: 40 h Self-study time: 50 h

Course: Erschließung und Einsatz alternativer Proteinquellen in der Tier- und Humanernährung (Seminar) *Contents*: In dem Modul wird den Studierenden das aktuelle fachliche Wissen zur technischen Erschließung alternativer Proteinquellen (u.a. Algen, Insekten) sowie der Einsatz dieser Proteinquellen in der Tier- und Humanernährung als Beitrag zu einer „*Sustainability Transition“* vermittelt. Inhaltliche Schwerpunkte, welche im Rahmen der seminaristischen Blockveranstaltung fokussiert werden, sind: • Das Konzept der „*Sustainability Transitions*“ • Lebensmitteltechnische Verfahren zur Herstellung von Fleischanaloga und Futtermittel • Ernährungsphysiologische Bewertung alternativer Proteinquellen in der tierischen Veredelung • Sensorische Analysen und weitere Möglichkeiten zur Bestimmung der Konsumentenakzeptanz *Course frequency:* each winter semester	
Examination: Präsentation, Referat oder Korreferat (ca. 20 Min.) **Examination requirements:** Das Modul weist einen stark interdisziplinären Charakter auf, sodass die Vermittlung des aktuellen fachlichen Wissens aus den einzelnen Fachdisziplinen (u.a. Lebensmitteltechnologie, Tierernährung, Sensorik) eine hohe Relevanz besitzt. Im Speziellen weisen die Studierenden durch die Teilnahme an dem Modul grundlegende Kenntnisse nach über: • Alternative Proteinquellen in der Tier- und Humanernährung • Nachhaltigkeitsinnovationen und *„Sustainability Transitions“* in der Lebensmittelerzeugung • Lebensmitteltechnische Verfahren zur Erschließung alternativer Proteinquellen • Nachhaltigkeitsbewertungen und -vergleiche • Ressourcenschonende Ernährungskonzepte in der Schweine- und Hänchenmast • Verfahren zur Bewertung der Fleischqualität • Möglichkeiten zur Quantifizierung der Konsumentenakzeptanz	3 C

Admission requirements:	**Recommended previous knowledge:**
none	none

Language: German	**Person responsible for module:** Prof. Dr. Frank Liebert
Course frequency: Wintersemester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.STL.0002: Sozio-ökonomische und sozio-kulturelle Bewertung von Nachhaltigkeitsinnovationen in der Lebensmittelproduktion**	3 C 2 WLH

Learning outcome, core skills: Die Studierenden erlernen in dem interdisziplinär ausgerichteten Modul basierend auf dem aktuellen Fachwissen grundlegende Schlüssel-kompetenzen, wie die Fähigkeit zur wirtschaftlichen und gesellschaftlichen Bewertung von Nachhaltigkeitsinnovationen in der Lebensmittelerzeugung. Darüber hinaus werden u.a. durch die Präsentation und die aktive Mitarbeit in dem Blockmodul instrumentale, systematische und kommunikative Kompetenzen gestärkt.	**Workload:** Attendance time: 40 h Self-study time: 50 h

Course: Sozio-ökonomische und sozio-kulturelle Bewertung von Nachhaltigkeitsinnovationen in der Lebensmittelproduktion (Seminar) *Contents*: In dem Modul wird den Studierenden das fachliche und methodische Rüstzeug vermittelt, um Nachhaltigkeitsinnovationen in der Lebensmittelproduktion aus räumlicher, wirtschaftlicher und gesellschaftlicher Sicht zu bewerten. Inhaltliche Schwerpunkte, welche im Rahmen der seminaristischen Blockveranstaltung fokussiert werden, sind: • Produktionsnetzwerke der Lebensmittelproduktion im Kontext von Raum und Gesellschaft • Enstehung und m Durchsetzung von Nachhaltigkeitsinnovationen • Identifikation der sozio-technischen Systeme der Lebensmittelerzeugung (u.a. Akteure der Wertschöpfungskette) inkl. Akzeptanzbestimmung neuer Technologien bei den Schlüsselakteuren • Verbrauchervertrauen und -misstrauen • Analyse von Kaufentscheidungen und Zahlungsbereitschaften mittels verhaltensökonomischer Experimente	3 WLH
Examination: Präsentation, Referat oder Korreferat (ca. 20 Min.) **Examination requirements:** Das Modul weist einen stark interdisziplinären Charakter auf, sodass die Vermittlung des aktuellen fachlichen Wissens aus den einzelnen Fachdisziplinen (u.a. Wirtschaftsgeographie, Agrarökonomie, Psychologie, Nachhaltigkeitsforschung) eine hohe Relevanz besitzt. Im Speziellen weisen die Studierenden durch die Teilnahme an dem Modul grundlegende Kenntnisse nach über: • (Globale) Produktionsnetzwerke und Nachhaltigkeitsinnovationen der Lebensmittelproduktion • Bedeutung von Verantwortungslogiken für nachhaltige Handlungspraktiken • Relevanz von Lernprozessen und Wissenstransfer inkl. *Lock-Ins* und Agenten des Wandels • Ansätze und Modelle der Akzeptanzforschung • Bedeutung von (gesellschaftlichem) Vertrauen in die Lebensmittelproduktion • Methoden für Kauf- und Zahlungsbereitschaftsanalysen am *Point of Sale*	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Ludwig Theuvsen
Course frequency: Sommersemester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.STL.0003: Doktorandenseminar Sustainability Transitions**	6 C 3 WLH

Learning outcome, core skills: In dem Modul stellen die Teilnehmer ihre Forschungsergebnisse der fachöffentlichen Diskussion. Die Doktoranden schulen dabei ihre rhetorischen Fähigkeiten und ihre Präsentationskompetenz. Durch die Teilnahme an den übrigen Seminaren im Modul erhalten die Promotionsstudenten einen interdisziplinären Überblick über aktuelle Forschungsthemen und Fachansätze der jeweiligen Forschungsgebiete. Die Anfertigung der Fortschrittsberichte (jeweils ca. 12 Seiten) trägt zudem zur Weiterentwicklung der Kompetenzen im Verfassen wissenschaftlicher Texte bei.	**Workload:** Attendance time: 42 h Self-study time: 138 h

Course: Doktorandenseminar Sustainability Transitions (Seminar) *Contents*: Im Doktorandenseminar des Promotionsprogramms „Sustainability Transitions in der Lebensmittelproduktion: Alternative Proteinquellen in soziotechnischer Perspektive“ stellt jeder Doktorand insgesamt drei mal den aktuellen Stand seiner Doktorarbeit vor (Konzeption des Vorhabens, empirische Ergebnisse, statistische Analysen usw.). Zum Vortrag wird ein Fortschrittsbericht (ca. 12 Seiten) angefertigt, welcher vor dem Seminar an alle Teilnehmer versendet wird. Das Seminar findet jeweils als Blockveranstaltung (ca. fünf Vorträge pro Termin) an den beteiligten Standorten des Promotionsprogramms – namentlich Vechta, Quakenbrück, Hannover und Göttingen – statt	3 WLH
Examination: 3 Fortschrittsberichte (á max. 12 Seiten) mit jeweils einer Präsentation (ca. 60 Minuten) **Examination prerequisites:** Teilnahme an 18 Seminaren **Examination requirements:** Sehr gute Kenntnisse des eigenen Forschungsgebietes und der entsprechenden Präsentationsanforderungen. Die in dem Vortrag dargebotenen Ergebnisse werden von einem internen oder externen Korreferenten begutachtet und kritisch kommentiert. Es erfolgt keine Notenbewertung; mangelhafte Leistungen führen aber zu einer Wiederholung des Vortrags und werden mit den Betreuern der Arbeit jeweils individuell reflektiert. Zu jeder der Präsentationen wird ein Fortschrittsbericht (ca. 12 Seiten) angefertigt, in welchem der aktuelle Stand der Arbeit schriftlich dargelegt wird. Die Prüfung des Berichts und die Entscheidung über die Annahme bzw. Überarbeitung obliegt dem jeweiligen Erstgutachter (i.d.R. Betreuer) der Doktorarbeit.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Ludwig Theuvsen
Course frequency: not specified	**Duration:** 6 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**

Maximum number of students: 20	