Georg-August-Universität
Göttingen

Directory of Modules

für den Promotionsstudiengang "Forstwissenschaften und Waldökologie"

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I. Faculty of Forest Sciences and Forest Ecology

1. PhD degree programme "Forest Sciences and Forest Ecology"

a. PhD Programme

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

aa. Advanced studies

At least 9 C must be successfully completed within three of the four following categories. Modules can also be chosen from other faculties of the university but must be accepted by the examining board.

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P.FORST.158: PhD-Colloquium Forest inventory and forest growth (3 C, 1 SWS).....40

P.FORST.159: PhD Seminar Tropical silviculture and forest ecology (3 C, 2 SWS)..... 41

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bb. Key competencies

At least 6 C must be successfully completed within the four following categories.

i. Teaching and mentoring activities

One semester of teaching or supervision activities (3 C)

ii. Project management and acquisition of third-party funds

Responsible participation in scientific project management or in the acquisition of third-party funds (3 C)

iii. Presentation of own research results

Presentation of own research results at a conference (3 C)

iv. Foreign language courses

Successful participation in foreign language courses, external educational institutions are also possible.

b. Graduiertenkolleg 2300 „Enrichment of European beech forests with conifers: impacts of functional traits on ecosystem functioning"

Doctoral candidates in RTG 2300 “Enrichment of European beech forests with conifers: impacts of functional traits on ecosystem functioning” must successfully complete modules worth overall 24 C according to the following regulations:

aa. Specialized study

At least five modules, worth at least 15 C must be successfully completed according to the following regulations

i. Compulsory modules

The following three modules worth 11 C must be successfully completed according to the following regulations

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ii. Mandatory modules

In the field of specific professional skills at least two of the following mandatory modules must be completed worth overall 4C.

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P.GRK2300.D2: Concepts and tools for collecting and analyzing spatial data in animal ecology (2 C).....58

P.GRK2300.D3: Use of stable isotope technologies in forest ecosystems research (2 C, 2 SWS).....60

P.GRK2300.D4: Molecular methods in ecology (2 C, 2 SWS).....61

P.GRK2300.D5: Statistical modelling and advanced regression analyses (2 C, 2 SWS).....62

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bb. Methods and Key competencies

At least 4 modules worth at least 9 C must be successfully completed according to the following regulations

i. Compulsory modules

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ii. Mandatory modules

At least 3 courses or seminars focusing on methodological knowledge or key competences worth at least 7C must be successfully completed. Courses from other institutions such as GFA, GGG or GAUSS will be accepted. Examples are “Academic writing and publishing”, “Transdisciplinarity and knowledge transfer”, “Basics of statistical analyses in biosciences”, “Project management”, “Presenting in English”, “Introduction in R”, “R for advanced users”. In addition, courses offered by the Section for Teaching and Learning in Higher Education can be completed. Up to 2 C can be awarded for teaching or the supervision of BA or MA students. The examination requirements follow the regulations of the respective institutions.

Georg-August-Universität Göttingen **Module P.FORST.101: Analytical Methods for Wood and Wood-Based Composites**	3 C 2 WLH

Learning outcome, core skills: Learning about laboratory methods to characterise polymer systems and fibre materials: (1) Thermoanalytical methods like DSC and TGA. Reaction mechanisms of thermosets and thermoplastics; determining the melting point, crystallisation enthalpy and glass transition point, determining the degree of crystallisation of thermoplastics, thermal decomposition of biomass; (2) Sorption dynamics: Determining the sorption isotherms for hygroscopic materials; including wood and wood composite materials, determining the material-specific enthalpy due to swelling, porosity and surface activity; dynamics of water vapour absorption and transmission; adsorption and desorption of organic vapours; measuring diffusion rates; (3) General characteristics of adhesive systems (rheological parameters, practical tests), (4) Determining formaldehyde content and emission of wood-based composites (perforator method, chamber method, gas analysis method,...), (5) Determining breakdown products in pyrolysis of wood and wood-based composites	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Emission and sorption behaviour of wood and wood-based composites (Practical course)	1 WLH
Course: Characterising adhesive systems for wood-based industries (Practical course)	1 WLH
Examination: 2 reports (each max. 10 pages) **Examination requirements:** During laboratory work, students will have to record experimental setup, methodology, and results, and submit this in the form of a written scientific paper.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Markus Christian Euring
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 8	

Georg-August-Universität Göttingen **Module P.FORST.103: Application of Isotopes**	3 C 2 WLH

Learning outcome, core skills: Isotopes are used in plant and earth sciences to trace the flux of elements. The course will first familiarise students with the basic concepts of atomic and nuclear physics. Through these, they will then be introduced to working with methods such as gas ionisation measurement, liquid scintillation counting, and phosphor imaging. Towards the end of the course, students will learn about natural radioactivity and the biological effects of ionising radiation. A practical part will first teach the handling of radioisotopes and then test the implementation of safety precautions and measurement methods using biological examples, e.g., transport in plants. In doing so, students will deploy methods for quantitative measurement of radioactivity to determine the metabolic rate of plants, compare them, and assess their suitability. The course aims to provide students with theoretical knowledge and practical experience in working with radioisotopes.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Application of Isotopes (Exercise,Seminar)	2 WLH
Examination: Written examination (60 minutes) **Examination requirements:** Students demonstrate that they are familiar with the basic concepts of atomic and nuclear physics as well as measurement methods using biological examples.	3 C

Admission requirements: MSc in a topic of life or natural sciences	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Andrea Polle
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 9	

Georg-August-Universität Göttingen **Module P.FORST.106: Manuscript seminar**	3 C 2 WLH

Learning outcome, core skills: Writing well-structured scientific manuscripts and constructive reviews of manuscripts; Knowing the reviewing and publication process including good scientific practice. The seminar will have three parts: 1. How to write scientific papers: General advice and best practice examples for writing scientific papers, which will be directly applied to developing and improving the manuscripts of the participants; ideally, the participants complete one manuscript from start to end during the course of the seminar. 2. How to review a scientific paper Structure and properties of peer review of scientific papers; Aims and perspective of the reviewer; criteria of sound reviews; writing a review on (parts of) manuscripts 3. Good scientific practice Dos and Don'ts in scientific cooperation, publication and peer review	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Manuscript seminar (Block course)	2 WLH
Examination: Term Paper (max. 10 pages) **Examination requirements:** - writing parts of a scientific manuscript on own data in English - reviewing scientific texts and giving constructive feedback - understanding and knowing how to apply the rules of good scientific practice - writing a protocol on 1-2 seminar sessions	3 C

Admission requirements: Good command of the English language, first research experiences, and sufficient data from own project to fill at least one table or one figure in a manuscript	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. rer. nat. Dominik Seidel
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 24	

Georg-August-Universität Göttingen **Module P.FORST.107: Microbiology and mycology**	6 C 4 WLH

Learning outcome, core skills: Students learn in individually designed courses important techniques in microbiology and mycology (sterile techniques, isolation and cultivation of organisms, morphological and physiological characterization of organisms, species identification, physiological manipulation of organisms for enzyme and metabolite productions, etc.). They will be introduced into diverse techniques of microscopy of microbes and plant cells for an introduction into cytology and development of micro-organisms and microbial interactions with plant material. This includes also advanced computer programs for image analysis. Students will learn how to plan experiments, how to document data according to good scientific practice and how to analyze and evaluate results. Students are obliged to report in seminars about their results and gained knowledge including reading and discussing subject related literature and to participate in scientific discussions also on unknown subjects.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Microbiology and mycology (Practical course,Seminar)	4 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Students are expected to hold a power point presentation on own results with an introduction to the subject, presentation of experiments and results and conclusions with subsequent discussion with their audience.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Ursula Kües
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module P.FORST.108: Molecular biology and biotechnology**	6 C 4 WLH

Learning outcome, core skills: Students learn in individually designed courses modern laboratory techniques, used in molecular biology and in biotechnology (DNA technology such as cloning and sequencing, fermentation, protein isolation, product characterization and others). They will be introduced in how to plan experiments, how to document their data according to good scientific practice and how to analyze and evaluate results. This includes introduction into computer programs and databases in statistics and molecular biology (genomics, proteomics). Courses in biotechnology of wood composites include production techniques and techniques of testing products under application of actual software. Students are obliged to report in seminars about their results and gained knowledge including reading and discussing subject related literature and to participate in scientific discussions also on unknown subjects.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Molecular Wood Biotechnology (Seminar)	2 WLH
Course: Molecular Biology and Biotechnology (Practical course)	2 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Students are expected to hold a power point presentation on own results including an introduction to the subject, presentation of experiments and results and conclusions with subsequent discussion with their audience.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Ursula Kües
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module P.FORST.109: Organic Trace Analysis in Chemical Ecology**	6 C 4 WLH

Learning outcome, core skills: Students will be familiar with the theoretical fundamentals and technical concepts of gas chromatographic–mass spectrometric trace analysis. Building on their knowledge of organic chemistry and the practical basics of working with gas chromatography, students will be able to complete their own trace analysis projects. They will know about, and be able to use, the basic functionalities of an analysis system. If necessary, drawing on the knowledge acquired in this course and the standard documentation, students will be in a position to continue their studies independently. Students will be able to recognise the benefit of a profound chemical-analytical background also in the field of practical applications in chemical ecology. Overview of topics covered in this module: chemical nomenclature and data bases, sampling techniques, basics of gas chromatography and analysis systems, systems for trace-analytical identification and quantification, calibration methods and trouble shooting.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Organic Trace Analysis in Chemical Ecology (Exercise,Seminar)	4 WLH
Examination: Presentation (ca. 20 minutes) with written report (max. 20 pages) **Examination requirements:** Knowledge of the theoretical basics and technical concepts of chromatographic–mass spectrometric trace analysis and the functionality of analysis systems. Knowledge of sampling techniques, chemical nomenclature, systems for trace-analytical indication and quantification, and calibration methods.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** [kein Vorname] N.N.
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 6	

Georg-August-Universität Göttingen **Module P.FORST.111: Wood laboratory course**	6 C 4 WLH

Learning outcome, core skills: Basically there are the following labs available: physical lab, biological lab, fungus lab, wood anatomical lab, chemical lab, testing lab for wood-based products. Although the students have a basis in certain methods, they should get basic information about other methods. The module contains several main topics on practical work in the different laboratories. Objective of the Course: The purpose of the course is to give students an understanding of the fundamentals of wood laboratory methods.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Wood laboratory course (Exercise)	4 WLH
Examination: Written protocol (max. 20 pages) **Examination requirements:** The students must write down the design, the methods and the results during the lab course and to prepare a report in the form of a scientific paper.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Susanne Bollmus
Course frequency: each semester	**Duration:** 6 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.FORST.112: Scientific literature and you! Reading, writing, and publishing**	3 C 2 WLH

Learning outcome, core skills: Students have a full understanding of the importance of scientific literature in research and the scientific publishing process including the editorial process and the roles of editors and referees. They are able to quickly skim and extract the most important parts from any journal article, or to critique an article after more thorough reading. They are able to plan a well-structured article, essay or grant application, and to write clearly and concisely with a good logical flow of ideas. In addition, they feel more comfortable writing in English.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Scientific literature and you! Reading, writing, and publishing	2 WLH
Examination: Term Paper (max. 10 pages) **Examination requirements:** Active participation, completing homework assignments	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Holger Kreft
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.FORST.113: Competence in research integrity**	2 C 1 WLH

Learning outcome, core skills: Students will train competences for a responsible professional conduct as a scientist, and reflect on standards, problems and possible solutions to problems within the research system. They will gain a deep understanding of their rights and obligations as a scientist and on scientific principles (fairness, respect, honesty, transparency). Through active participation and discussion of case studies students get a sense for possible conflicts and can use strategies for prevention and/or solution of these.	**Workload:** Attendance time: 10 h Self-study time: 50 h

Course: Competence in research integrity (Seminar) *Contents*: Standards of research integrity for management and treatment of data, scientific publishing, authorship, mentoring und responsibilities in day-to-day research.	1 WLH
Examination: Presentation (approx. 10 minutes) with written outline (max. 10 pages) **Examination requirements:** Presentation and discussion of a case study in the group.	2 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** PD Dr. Martin Potthoff
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:
After successfully completing P.FORST.113 students are not allowed to complete P.AG.0023.

Georg-August-Universität Göttingen **Module P.FORST.114: Elektrophysiologie in der chemischen Ökologie**	6 C 4 WLH

Learning outcome, core skills: Die Studierenden kennen die theoretischen Grundlagen sowie technischen Konzepte elektrophysiologischer Methoden. Mit den erworbenen Kenntnissen in Neurobiologie und Elektrophysiologie sowie praktischen Grundkenntnissen in der Arbeit mit Elektroantennographie-Aufbauten auch in direkter Kopplung mit Gaschromatographen können sie einfache elektrophysiologische Projekte durchführen. Sie wissen, welche grundlegende Funktionalität ihnen ein Untersuchungssystem dabei bietet und können diese nutzen. Sie können sich ggf. auf der Basis dieser Kenntnisse mit Hilfe der üblichen Dokumentation in diesem Bereich selbständig weitergehend einarbeiten. Die Studierenden verstehen den Nutzen eines fundierten biochemisch-elektrophysiologischen Hintergrundes auch im Bereich praktischer Anwendungen in der Chemischen Ökologie. Überblick über die Modulinhalte: Zucht und Haltung von Insekten, Präparationstechniken, Elektrophysiologische Grundlagen und Untersuchungssysteme, Systeme zur elektrophysiologischen Identifikation und Quantifizierung, Kalibrierungsmethoden und Fehlersuche.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Elektrophysiologie in der chemischen Ökologie (Seminar)	1 WLH
Course: Elektrophysiologie in der chemischen Ökologie (Exercise)	3 WLH

Examination: Minutes / Lab report (max. 20 pages)	6 C

Admission requirements: Voraussetzungen für die Zulassung zur Prüfung: Organische Spurenanalytik in der chemischen Ökologie (P.Forst.109)	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** [kein Vorname] N.N.
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 3	

Georg-August-Universität Göttingen **Module P.FORST.115: Special Methods in Molecular Tree Physiology**	3 C 4 WLH

Learning outcome, core skills: PhD student receive individual training in special methods for their doctoral work. The scope of methods is wide from molecular biology, physiology to ecology and depends on the specific project requirements	**Workload:** Attendance time: 56 h Self-study time: 34 h

Course: Introductory course to special methods in molecular ecophysiology (Exercise)	2 WLH
Examination: Protocol (max. 20 pages) **Examination requirements:** Students demonstrate that they have understood and can apply the special methods in which they have been trained. They have further acquired comprehensive knowledge of the background and theory on which methods are based.	3 C

Admission requirements: MSc in an area of life sciences	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Andrea Polle
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 1
Maximum number of students: 4	

Georg-August-Universität Göttingen **Module P.FORST.121: Analysis of population genetic data I+II**	6 C 4 WLH

Learning outcome, core skills: Part 1: Analysing genetic inheritance and phylogenetic reconstruction. Inheritance analysis of genetic markers, especially DNA markers: Theory and practical data analysis. Using genetic markers for phylogenetic and phylogeographic analysis of populations Part 2: Quantification and spatial structuring of genetic variation Analysis of genetic variation: quantifying genetic variation within and between subpopulations. Inferring population genetics processes. Estimating parameters of mating systems and selection as well as spatial distribution of genetic variation, particularly regarding gene flow. Parts 1 and 2: Practical introduction to selected software.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Inheritance analysis and reconstructing descent (Lecture,Exercise,Seminar)	2 WLH
Course: Quantifying and spatial structuring of genetic variation (Lecture,Exercise,Seminar)	2 WLH
Examination: 2 x Presentations (approx. 20 minutes) with written reports (max. 10 pages) **Examination requirements:** Basic knowledge of genetic inheritance analysis, reconstructing descent, and quantifying the spatial structure of genetic variation as well as more in-depth knowledge of two specific topics.	6 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.FORST.123: PhD Seminar in ecological and population genetics**	3 C 2 WLH

Learning outcome, core skills: Acquisition of knowledge in critical discussion of research results.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD Seminar in ecological and population genetics (Seminar) *Contents*: Presentations of MSc, PhD students or guest scientists to current research and publications in the field of ecological genetics/ population genetics.	2 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Knowlegde of own research and publications in the field of ecological genetics/ population genetics.	3 C

Admission requirements: Basic knowledge auf forest ecology and genetics.	**Recommended previous knowledge:** According to the content.
Language: German	**Person responsible for module:** Prof. i. R. Dr. Hans-Rolf Gregorius
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.124: Metrics of biodiversity**	3 C 2 WLH

Learning outcome, core skills: Acquisition of knowledge and use of modern methods in the field of metrics of biodiversity.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Metrics of biodiversity (Seminar) *Contents*: • Meaning of biological and genetic variation for conservation and utilization of biological systems. • Indication of the condition of populations and species communities • Metrics of biological and genetic variation and their concepts • Biological diversity and sustainable handling of biological systems	2 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Knowledge of modern methods in the field of measurement of biological diversity and their applications. Knowledge about the meaning and metrics of biological and genetic variation and the sustained applications in biological systems.	3 C

Admission requirements: none	**Recommended previous knowledge:** According to the content.
Language: German	**Person responsible for module:** Prof. i. R. Dr. Hans-Rolf Gregorius
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.FORST.125: Specific lectures in wood science and technology**	3 C 2 WLH

Learning outcome, core skills: This module offers online courses on various aspects of wood science and technology. The range of courses covers subject areas such as wood chemistry, wood physics, wood preservation and wood-based materials. The aim of the module is to combine knowledge on the theoretical background of the specific topics with in-depth aspects of current research activities and practical (industrial) applications.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Specific lectures in wood science and technology (Lecture)	2 WLH
Examination: Oral examination (approx. 20 minutes) **Examination requirements:** Students are expected to be able to participate in a scientific discussion on the topic of the online course and to make a meaningful contribution based on a broad knowledge base.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Carsten Mai
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.FORST.126: Theories of forest policy I+II**	6 C 4 WLH

Learning outcome, core skills: The students get an overview over the theories of forest policy and their application in research. Using case studies the assumptions and potential of the theories were shown and the students work with the theories based on literature. The evaluation is based on oral presentation and written paper.	**Workload:** Attendance time: 56 h Self-study time: 124 h

Course: Theories of forest policy I (Seminar)	2 WLH
Course: Theories of forest policy II (Seminar)	2 WLH
Examination: Presentation (approx. 20 minutes) with written outline (max. 20 pages) **Examination requirements:** A selected political topic is analyzed theoretically sound, well based on literature and illustrated by empirical findings.	6 C

Admission requirements: none	**Recommended previous knowledge:** Basic knowledge in political theory and methodology.
Language: English	**Person responsible for module:** Prof. Dr. Maximilian Krott
Course frequency: each semester	**Duration:** 2 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.132: Colloquium in forest ecosystems**	1,5 C 1 WLH

Learning outcome, core skills: Contributors will speak on current activities in research on forest ecosystems (internal and external) which allows students to engage with up-to-date results on progress in research.	**Workload:** Attendance time: 14 h Self-study time: 31 h

Course: Colloquium in forest ecosystems (Seminar)	1 WLH
Examination: Protocoll (max. 5 pages) **Examination requirements:** Knowledge of the presented research on forest ecosystems.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: English, German	**Person responsible for module:** Prof. Dr. Michael Bredemeier
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.143: PhD Colloquium in forest economics**	3 C 2 WLH

Learning outcome, core skills: Instruction to work independently on scientific topics within the field of forest economics. Students are to gain experience in presenting, applying presentation methods and defending their work through scientific discussion.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD Colloquium in forest economics (Seminar) *Contents*: Course contents will include conceptual-theoretic approaches, methods, results and conclusions of current PhD research (projects) in forest economics.	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination requirements:** Scientific presentation on a topic of the PhD thesis including a discussion thereof.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Carola Paul
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.144: PhD seminar: Molecular Plant Science**	1,5 C 2 WLH

Learning outcome, core skills: Active participation in scientific discussions, developing and presenting research projects.	**Workload:** Attendance time: 28 h Self-study time: 17 h

Course: PhD Colloquium in molecular plant sciences (Seminar) *Contents*: Presentations on current projects and work in progress in molecular plant sciences.	1 WLH
Examination: Oral examination (approx. 15 minutes) **Examination requirements:** Students demonstrate that they are able to critically evaluate research from outside their own area of expertise and actively engage in scientific discussions.	

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

Georg-August-Universität Göttingen **Module P.FORST.146: PhD Seminar in forest and conservation politics and forest history**	3 C 2 WLH

Learning outcome, core skills: The PhD students improve the theoretical basis of their project and the methods. They present the project in different research steps and discuss them within the peer group. They react on critique by the supervisor and design and test improvements.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD Seminar in forest and conservation politics and forest history (Seminar)	2 WLH
Examination: Presentation (approx. 10 minutes) and written report (max. 10 pages) **Examination requirements:** Knowledge and experience about the own research projec.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Maximilian Krott
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.147: PhD Seminar in soil science of temperate ecosystems**	3 C 2 WLH

Learning outcome, core skills: • Overview of current and planned projects and research at the department. • Learning about new methods for experiments, analyses and interpretation. • Presentation and discussion of the students‘ own research results. • Preparing papers for conferences • Learning from invited guest lectures	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD Seminar in soil science of temperate ecosystems (Seminar)	2 WLH
Examination: Presentation (ca. 20-25 minutes) and subsequent discussion (ca. 20 minutes) **Examination requirements:** • Assessment of the presentation within the seminar • Assessment of the discussion of the student’s own results • Participation in the discussion of other students‘ contributions	3 C

Admission requirements: none	**Recommended previous knowledge:** Modules in soil science
Language: German, English	**Person responsible for module:** Prof. Dr. Norbert Lamersdorf
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.FORST.148: PhD Seminar in soil science of tropical and subtropical ecosystems**	3 C 2 WLH

Learning outcome, core skills: Successfully presenting a paper on a soil science topic to an expert audience (topics, e.g.: workplan, progress, practising giving a talk for an international scientific conference, practising the viva voce presentation, overview of current topics in soil science). Developing a workplan for fieldwork, report on progress. Writing abstracts for conferences.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD Seminar in soil science of tropical and subtropical ecosystems (Seminar)	2 WLH
Examination: Presentation (approx. 30 Minuten) with written outline (max. 5 Pages) **Examination requirements:** Regular attendance at seminar sessions, independently prepare and give a presentation.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Edzo Veldkamp
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.149: PhD and third-party-funding colloquium NWFVA**	3 C 2 WLH

Learning outcome, core skills: Participants develop and present concepts and results from their area of research.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD and third-party-funding colloquium NWFVA *Contents*: This colloquium will provide an overview of current research projects at the NW-FVA (Northwest German Forest Research Institute). Presentations should give insight into the current stage of the project and indicate problems and possible solutions. The colloquium provides the opportunity to discuss critically the content and formal aspects of the presentations Presentations, topics, and dates are released on the departmental websites or separate a posting on the noticeboard.	2 WLH
Examination: Presentation (ca. 30 minutes) and subsequent discussion (ca. 15 minutes) **Examination requirements:** Knowledge of the participants‘ own research results and approaches.	3 C

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

Georg-August-Universität Göttingen **Module P.FORST.150: Forest Botanical Seminar**	3 C 2 WLH

Learning outcome, core skills: Participating in scientific discussions of on-going research projects in the areas of applied wood biotechnology, mycology and tree physiology, presentation of work progress.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Seminar in forest botany (Seminar) *Contents*: Presentations on current projects and work in progress.	2 WLH
Examination: Presentaion (approx. 20 minutes) with written outline (max. 10 pages) **Examination requirements:** Students demonstrate that they can present current research results to an expert audience. Additionally, they learn to critically evaluate experiments.	3 C

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

Georg-August-Universität Göttingen **Module P.FORST.151: Colloquium in forest genetics**	1,5 C 1 WLH

Learning outcome, core skills: Understanding modern research approaches in forest genetics.	**Workload:** Attendance time: 14 h Self-study time: 31 h

Course: Colloquium in forest genetics *Contents*: External speakers present their work.	1 WLH
Examination: Minutes / Lab report (max. 5 pages) **Examination requirements:** Knowledge of modern research approaches in the field of forest genetics.	

Admission requirements: Understanding of current research in the field of forest genetics.	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module P.FORST.152: Seminar in forest genetics**	1,5 C 1 WLH

Learning outcome, core skills: Ability to plan and implement research projects in forest genetics.	**Workload:** Attendance time: 14 h Self-study time: 31 h

Course: Seminar in forest genetics (Seminar) *Contents*: Masters students and PhD candidates present their work	1 WLH
Examination: Oral Report (approx. 30 minutes) **Examination requirements:** Knowledge of the partacipants' own research projects.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Oliver Gailing
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module P.FORST.153: Seminar of the Department of Forest Zoology and Forest Conservation**	3 C 2 WLH

Learning outcome, core skills: Presentation and discussion of own research results with forest zoological or chemo-ecological topics as well as critical discussion of current relevant publications.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Seminar of the department of forest zoology and forest conservation (Seminar) *Contents*: Oral presentation of current projects and publications.	2 WLH
Examination: Presentation (aprox. 15 minutes) **Examination requirements:** Clear presentation of own research results and their discussion in a forest-zoological and/or chemo-ecological context.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Dr. Bernhard Weißbecker
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.154: Department seminar in wood biology and wood technology**	3 C 2 WLH

Learning outcome, core skills: Within the framework of the seminar, master students and doctoral students present the results of their research work. The results will be discussed subsequently. In addition, new methods and devices will be presented. Learning targets are the presentation of scientific research (dissertation) and its discussion in the group.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Department seminar in wood biology and wood technology (Seminar)	2 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** Knowledge of the own research work and research findings.	3 C

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

Georg-August-Universität Göttingen **Module P.FORST.155: Literature seminar - The Journal Club**	3 C 2 WLH

Learning outcome, core skills: Students select suitable literature and learn to review, present, and evaluate scientific texts. They practise their discussion skills and dealing with criticism, especially in an intercultural setting. Using examples of successful research, participants will train analytical thinking skills and strategic project planning. Positive examples will serve as models for the students' writing projects.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Literature seminar - The Journal Club (Seminar)	2 WLH
Examination: Presentation (approx. 20 minutes with subsequent discussion) **Examination requirements:** Students demonstrate that they can make a suitable selection of literature and present and evaluate publications. Using examples of successful research, students train analytical thinking skills and strategic project planning.	3 C

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

Georg-August-Universität Göttingen **Module P.FORST.156: PhD Colloquium ecoinformatics, biometrics and forest growth**	3 C 2 WLH

Learning outcome, core skills: Students will learn to present their own research *or* results from the latest publications and engage in the subsequent scientific discussion. This will primarily prepare students for giving presentations on their own results at international workshops and conferences. Furthermore, students will learn to engage in scientific discussions, posing critical and constructive questions. The topics covered in this colloquium will be drawn from the fields of ecological modelling, data analysis, simulation, or developing and applying the respective tools from informatics.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD Colloquium ecoinformatics, biometrics and forest growth (Seminar)	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination requirements:** The presentation will have to meet the requirements for an engaging scientific paper, precise wording, comprehensibility, and a clear structure. In the subsequent discussion, the presenters will demonstrate their grasp of the topic and adequately answer questions from the audience. Students are also expected to participate in the discussions of other presentations than their own. They may have to complete additional tasks as parts of the exam: written summary of presentation (1 page), log (max. 5 pages), chairing a discussion.	3 C

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

Georg-August-Universität Göttingen **Module P.FORST.157: Current research in ecological modelling**	3 C 2 WLH

Learning outcome, core skills: Participants learn to present their own research results or results from the current literature in front of a scientific audience. They learn to respond to scientific questions as well as participate in a critical, but constructive way in scientific discussions of the presented topics. Practice talks for the active participation in international workshops or conferences are an integral part of this seminar. Topics of this seminar range from model conceptualization and ecological modelling to data analysis, development of statistical methods and spatial statistics.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Current research in ecological modelling (Seminar)	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination requirements:** Presenting results from the current literature in front of a scientific audienc. Respond to scientific questions.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Kerstin Wiegand
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.FORST.158: PhD-Colloquium Forest inventory and forest growth**	3 C 1 WLH

Learning outcome, core skills: This colloquium offers a platform for scientific discussion of contemporary topics and challenges in the field of forest monitoring and forest growth, which includes corresponding applications of remote sensing. The goal is to update the participants in the field of monitoring of forest and tree resources which extends both to the pure technical statistical approaches of estimation and modeling but also into the domain of the use of the generated information in forest management and forest policy. It is therefore a straightforward continuation of the MSc-modules which focus very much on basic techniques and the “mechanics” of monitoring. At the end, the participants should have increased their knowledge and competence in the field of monitoring and dispose of a significantly sharpened awareness for the challenges of the many technical and strategic detail questions when implementing and reporting forest monitoring exercises. The colloquium is being implemented in a seminar style where in each week one project or manuscript is presented and critically discussed.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: PhD-Colloquium Forest inventory and forest growth (Seminar)	1 WLH
Examination: Paper presentation (approx. 25 minutes) **Examination requirements:** Prepare a paper for presentation (powerpoint, duration 20-25min); (2) Write an abstract of the presentation; (3) Present the paper and prepare and facilitate the scientific discussion	3 C

Admission requirements: none	**Recommended previous knowledge:** It is recommended that the participants have heard courses in statistical applications in forest sciences including sampling, forest inventory, forest mensuration, remote sensing.
Language: English	**Person responsible for module:** Prof. Dr. Christoph Kleinn
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 14	

Georg-August-Universität Göttingen **Module P.FORST.159: PhD Seminar Tropical silviculture and forest ecology**	3 C 2 WLH

Learning outcome, core skills: • Critical discussion of PhD studies, including questions of the study design and statistical approaches • Training of presentation style and techniques	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: PhD Seminar Tropical silviculture and forest ecology (Seminar)	2 WLH
Examination: Presentation (approx. 30 minutes) or report (max. 10 pages) **Examination requirements:** Presentation and critical discussion of results	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Dirk Hölscher
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 20	

Georg-August-Universität Göttingen **Module P.FORST.160: Seminar in wildlife sciences**	3 C

Learning outcome, core skills: Introduction to current research in wildlife sciences, presentation and discussion of the participants‘ own research in English, improving the participants‘ presentation skills.	**Workload:** Attendance time: 0 h Self-study time: 90 h

Course: Seminar in wildlife sciences *Course frequency:* each semester	2 WLH
Examination: Oral Presentation (approx. 30 minutes) **Examination requirements:** Familiarity with the topics covered in the seminar.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Niko Balkenhol
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: not limited	

Georg-August-Universität Göttingen **Module P.FORST.170: Seminar on wood science and wood technology**	3 C 2 WLH

Learning outcome, core skills:	**Workload:**
This seminar is a compulsory part of the Ph. D. programme "Wood Biology and Wood Technology" and furthermore for all interested Ph. D. students. The students have to give in minimum four presentations on wood science topics whereas two presentations deals with the theme of the own dissertation. Two presentations are free in theme. The presentations are discussed and evaluated by all attendant participants of the study and by the respective supervisor. Objective of the Course: The students are trained in scientific presentation with special regarding on quality of the slides, the speech, the scientific content.	Attendance time: 28 h Self-study time: 62 h

Course: Seminar on wood science and wood technology (Seminar)	2 WLH
Examination: Presentations (each about 20 minutes) **Examination requirements:** The candidates have to give 2 presentations about the topic of their dissertation (one at the beginning and one at the end) and 2 additional presentations about free topics related to wood or forest sciences. Content and form of the presentations as well as the time allotted for speaking are included for the evaluation.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Holger Militz
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 30	

Georg-August-Universität Göttingen **Module P.FORST.171: Seminar in methods of forest economics**	3 C 1 WLH

Learning outcome, core skills: Vorstellung und Diskussion aktueller, methodischer Entwicklungen in der forstökonomischen Forschung. Die Studierenden sollen aktuelle Theorien, Methoden und Techniken aus dem eigenen aber auch übergreifenden Forschungsfeld erarbeiten und vorstellen. Aufbauend auf den Methoden wird die kritische Diskussion und Entwicklung von Forschungshypothesen angeregt. Im Rahmen der Veranstaltung werden begleitende Hinweise für die Erstellung wissenschaftlicher Publikationen und den Begutachtungsprozess im Bereich Forstökonomie und Landnutzungsplanung gegeben.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Forstökonomisches Methodenseminar (Seminar)	1 WLH
Examination: Oral Report (approx. 30 minutes) **Examination requirements:** Kenntnisse etablierter und aktueller forstökonomischer Forschungsmethoden.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Carola Paul
Course frequency: once a year	**Duration:** 2 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.172: Seminar for doctoral students in Forest Nature Conservation**	3 C 1 WLH

Learning outcome, core skills: The colloquium serves the instruction for scientific working in the area of nature conservation and landscape management. The phd-students should train their scientific presentation and discussion skills. Conceptual-theoretical approaches, methods, results and conclusions from ongoing dissertation and research projects will be presented and discussed.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: Seminar for doctoral students in nature conservation and landscape management (Seminar) *Contents*: Presentation and discussion of conceptional-theoretical approaches, methods, results and conclusions of ongoing dissertation and research projects in the field of nature conversation and landscape management.	1 WLH
Examination: Presentation (approx. 30 minutes) and discussion (approx. 30 minutes) **Examination requirements:** Knowledge of conceptual-theoretical approaches, methods, results and conclusions from ongoing dissertation and research projects.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: German	**Person responsible for module:** Prof. Dr. Andreas Schuldt
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 8	

Georg-August-Universität Göttingen **Module P.FORST.173: Case studies in International Land Use and Forest Governance**	6 C 2 WLH

Learning outcome, core skills: In this advanced class at PhD-level, students will acquire scientific skills necessary for independently analysing international processes, policies, or institutions relevant in forest or broader land use governance. The skills include social scientific methods from the fields of Policy Analysis or International Relations, producing empirically rich insights/results from them and in selected case studies, and drawing theory-oriented conclusions from the cases studies.	**Workload:** Attendance time: 28 h Self-study time: 152 h

Course: Case studies in International Land Use and Forest Governance (Lecture) *Contents*: Under supervision, yet as independently as possible, the participants elaborate case studies in the field of international land use or forest policy. Ideally, they do so based on their own experiences, backgrounds and contexts of origin. This class will equip them with the analytical tools and skills relating to: • Case study **methods** from Policy Analysis and/or International Relations and their critical discussion/further development • **Findings** from selected case studies (own research) and their critical discussion • **Conclusions** from selected case studies (own research) and their critical discussion towards theory development Literatur: Giessen (2018): Habilitation Thesis U Göttingen (see studIP)	2 WLH

Examination: Term Paper (max. 20 pages) **Examination requirements:** Skills for analysing international cases of land use or forest governance, based on relevant methods, empirical or literature research, and theory-oriented conclusions. Presentation in generally accepted scientific formats.	6 C

Admission requirements: none	**Recommended previous knowledge:** Policy Analysis and/or International Relations
Language: English	**Person responsible for module:** Prof. Dr. Maximilian Krott
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.174: PhD Colloquium Forest Operations**	3 C 2 WLH

Learning outcome, core skills: Das Kolloquium dient der Anleitung zum wissenschaftlichen Arbeiten im Fachbereich Arbeitswissenschaft und Verfahrenstechnologie. Die Doktoranden sollen ihre Fähigkeiten in den Bereichen wissenschaftlicher Vortrag und Diskussion vertiefen. Inhalte der Präsentationen können Definition und Abgrenzung konzeptionell-theoretischer Lösungsansätze zu Forschungsfragestellungen, Methoden, Ergebnisse und Schlussfolgerungen aus laufenden Dissertations- und Forschungsvorhaben sein.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Doktoranden-Kolloquium Forstliche Verfahrenstechnik (Seminar)	2 WLH
Examination: Referat (ca. 20 Min) mit schriftlicher Ausarbeitung (max. 10 Seiten)	3 C

Examination requirements: Präsentation und kritische Diskussion der verwendeten Methodik und Forschungsergebnisse	

Admission requirements: nur mit Zulassung zum Promotionsstudium.	**Recommended previous knowledge:** Lehrinhalte der Module der Abteilung Arbeitswissenschaft und Verfahrenstechnologie im Wahlpflicht- und Wahlmodulbereich des Masterstudiengangs Forstwissenschaften und Waldökologie.
Language: German, English	**Person responsible for module:** Prof. Dr. Dirk Jaeger
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.175: Current research in the Bioclimatology group**	3 C 2 WLH

Learning outcome, core skills: Introduction to current bioclimatological research results, presentation and discussion of the participants‘ own results in English, improving their presentation skills.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Seminar in bioclimatology (Seminar)	2 WLH
Examination: Oral Report (approx. 30 minutes) **Examination requirements:** Knowledge of current bioclimatological research and the participant’s own research results.	3 C

Admission requirements: none	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Alexander Nils Knohl
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 10	

Georg-August-Universität Göttingen **Module P.FORST.176: Current topics in the wildlife sciences**	3 C 2 WLH

Learning outcome, core skills: Researchers in wildlife sciences are often faced with rapidly developing topics, for example because of natural catastrophes (e.g., draughts, fires), changing regulations (e.g., hunting laws) or emerging diseases (e.g., African Swine Fever). This makes wildlife sciences highly dynamic, and also poses a challenge to researchers because they often have to gain an overview of novel research themes very quickly. The aim of the course is to provide students with an overview of chosen current topics in wildlife research, conservation and management. The exact topic(s) covered during the course will be announced at the beginning of semester, and will be reviewed via scientific publications, textbooks and presentations.	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Current topics in the wildlife sciences (Seminar)	2 WLH
Examination: Oral Presentation (approx. 45 minutes) **Examination requirements:** Oral presentation (45 minutes) and leading of a discussion (45 minutes) on assigned topics. To successfully complete the course, students a) have to demonstrate an in-depth understanding of the topics covered in the course, b) be able to present and summarize results from published studies on these topics, and c) be capable of discussing the topics and presented studies with their peers.	

Admission requirements: PhD student at Goettingen University	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Niko Balkenhol
Course frequency: each summer semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 4
Maximum number of students: 12	

Georg-August-Universität Göttingen **Module P.FORST.177: PHD-Colloquium Silviculture and Forest Ecology**	3 C 1 WLH

Learning outcome, core skills: This colloquium aims at stimulating scientific discussion of contemporary research proposal and results in the field of silviculture and forest ecology with a special focus on temperate forest ecosystems. The participants should learn to present their research comprehensively and clear. They also learn to respond to scientific questions and how to participate in a critical, but constructive way in scientific discussions.	**Workload:** Attendance time: 14 h Self-study time: 76 h

Course: PHD-Colloquium Silviculture and Forest Ecology (Colloquium)	
Examination: Paper presentation (approx. 25 minutes) **Examination requirements:** Prepare a paper for presentation (20-25 min) and discussion in the field of silviculture and forest ecology.	3 C

Admission requirements: none	**Recommended previous knowledge:** It is recommended that the participants have heard courses in statistical applications in forest science.
Language: English	**Person responsible for module:** Prof. Dr. Christian Ammer
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.FORST.178: PHD-Colloquium – „Forum Doctorum“ – Current topics in veterinary- and wildlife medicine**	3 C 2 WLH

Learning outcome, core skills: Vorträge über geplante und laufende Projekte und Arbeiten	**Workload:** Attendance time: 28 h Self-study time: 62 h

Course: Doktoranden-Kolloquium – „Forum Doctorum“ – Aktuelle Fragestellungen in der Veterinär- und Wildtiermedizin (Seminar)	2 WLH
Examination:	3 C

Examination requirements: Die Studierenden erbringen den Nachweis, dass sie aktuelle Forschungsergebnisse anderen Forschern präsentieren können, des Weiteren lernen die Teilnehmer die Experimente anderer sowie ihre eigenen kritisch zu hinterfragen. Falls nicht über eigenen Ergebnisse berichtet werden kann, können Erkenntnisse aus themenrelevanten Feldern vorgetragen werden.	

Admission requirements: none	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** apl. Prof. Dr. Stephan Neumann
Course frequency: each semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.A: Interdisciplinary research on the functionality of forest ecosystems**	2 C

Learning outcome, core skills: PhD students • have a general understanding of the overall research question and the specific role of their subproject therein • are familiar with the research sites • have an idea about successful interdisciplinary research projects and have gathered information on how to conduct large research projects addressing tree mixtures • acquire competences in working together in a team and learn about international quality standards of scientific working, gender and equality issues	**Workload:** Attendance time: 40 h Self-study time: 20 h

Course: Interdisciplinary research on the functionality of forest ecosystems (Excursion) *Contents*: Introductory excursion to research sites, focusing on an introduction in the overall research question, visit of the project's field sites, visit of sites of other interdisciplinary research projects focusing on tree species mixtures, including a workshop on "Good Scientific Practice", "Interdisciplinarity" or "Working in a team".	

Examination: Term Paper (max. 5 pages), not graded **Examination requirements:** PhD students • have a general understanding of the overall research question and the specific role of their subproject therein • are familiar with the research sites • have an idea about successful interdisciplinary research projects and have gathered information on how to conduct large research projects addressing tree mixtures • have competences in working together in a team and know about international quality standards of scientific working, gender and equality issues • can summarize those aspects of the excursion which they believe are most relevant for their own research project	2 C

Admission requirements: Membership in RTG 2300	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Serena Müller
Course frequency: each summer semester; Every 3 years starting 2018	**Duration:**
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 2

Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.B: Colloquia and Research seminars**	4 C 4 WLH

Learning outcome, core skills: PhD students • can present and defend their research design, progress and results in front of an academic audience • improve their presentation skills • can optimize and adjust their research by integrating the feedback of fellow students and supervisors • enlarge their knowledge on state of the art research (methods) • learn to interact in academic discourses by critically reflecting and discussing their fellow PhD students' research projects	**Workload:** Attendance time: 56 h Self-study time: 64 h

Course: RTG 2300 internal research seminar (Colloquium) *Contents*: PhD students will present and discuss their research design, progress and results at least twice in the internal RTG PhD seminar.	2 WLH
Course: Colloquium of the PhD student's PI's working group (Colloquium) *Contents*: PhD students will present their research design progress and results at least twice in their supervisors´ working groups´ PhD seminar. They will attend the other PhD students' presentations and comment and discuss their presentations.	2 WLH
Examination: Oral Presentation (approx. 30 minutes), not graded **Examination prerequisites:** 3 presentations (each of about 30 minutes, not graded) in both the RTG's and the respective PI's working groups´ PhD seminars **Examination requirements:** Regular attendance and active participation and very good knowledge of one's own research project	4 C

Admission requirements: Membership in RTG 2300	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Christian Ammer
Course frequency: each semester; Working groups' seminars every semester; RTG PhD seminar every winter semester starting in 2017/18	**Duration:** 4 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 6
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.C: International conference and lecture series**	5 C 4 WLH

Learning outcome, core skills: PhD students • have built an international network with other researchers • can present and defend their research results in front of an international audience in an systematic way • can optimize and adjust their research by integrating the feedback of internationally visible scholars • have competences in organizing stays of visiting scholars and conferences • can chair other scientists' talks and the subsequent discussions • enlarge their knowledge on most current research results • have identified and are in contact with potential employers	**Workload:** Attendance time: 56 h Self-study time: 94 h

Course: Lecture Series *Contents*: PhD students will invite at least one visiting scholar, prepare their stay, introduce them to the group and chair their talk in the RTG lecture series. They will furthermore organize the RTG symposium at the end of the three-years funding period.	2 WLH
Course: International Conference *Contents*: PhD students will present their work at least at one international conference.	2 WLH
Course: Potential employer presentation *Contents*: PhD students will present themselves during a meeting with potential employers. They are free to choose any suitable format (presentations and poster sessions, world-coffee or round table talks, joint workshop with the employers etc.).	2 WLH
Examination: Oral Presentation (approx. 30 minutes) **Examination requirements:** PhD students • have built an international network with other researchers • can present and defend their research result in front of an international audience in an systematic way • can optimize and adjust their research by integrating the feedback of international scholars • have competences in organizing stays of visiting scholars and conferences • can introduce visiting researchers to a group and chair other scientists' talks and the subsequent discussions • enlarge their knowledge on most current research results • have identified and are in contact with potential employers • have organized a visiting scholars stay and a symposium • have chaired a visiting scholar's talk	5 C

Admission requirements: Membership in RTG 2300	**Recommended previous knowledge:** none
Language: German, English	**Person responsible for module:** Prof. Dr. Christian Ammer
Course frequency: each summer semester; Every 3 years starting in 2018	**Duration:** 5 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:**
Maximum number of students: 15	

Additional notes and regulations:
The "Lecture Series" is compulsory for all students. In addition PhD students have to chose either "International Conference" or "Potential employer presentation".

Georg-August-Universität Göttingen **Module P.GRK2300.D1: Ecology of mixed forests and methods of ecophysiological research on trees**	2 C 2 WLH

Learning outcome, core skills: The students get familiar with basics on mixed forest stands such as the diversity-productivity relationship and its variation in space and time. The students will also get to know various ecophysiological methods related to tree growth, water consumption, nutrient uptake etc.	**Workload:** Attendance time: 30 h Self-study time: 30 h

Course: Ecology of mixed forests and methods of ecophysiological research on trees *Contents*: Ecological and physiological processes, stand dynamics, gas exchange, sap-flow, water-use efficiency, root dynamics. *Literatur:* Leuschner, Ellenberg (2017) Ecology of Central European Forests. Springer Nature, Cham. Pretzsch, Forrester, Bauhus (eds) (2017): Mixed-species forests. Ecology and Management, Springer. Von Willert, Matyssek, Herppich (1995): Experimentelle Pflanzenökologie. Grundlage und Anwendungen. Georg Thieme Verlag	2 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** The students demonstrate their ability to present the methods and results of a scientific paper thereby demonstrating their ability to critically discuss the novelty and the potential limitations of the study.	2 C

Admission requirements: membership in RTG 2300. Other PhD students can be admitted if free places are available.	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Christoph Leuschner
Course frequency: every three years starting in summer term 2019	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 2 - 4
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.D2: Concepts and tools for collecting and analyzing spatial data in animal ecology**	2 C

Learning outcome, core skills: This module will enable students to gather, handle, analyze and interpret data for various research questions related to spatial animal ecology. For this, the module will first cover the most important theories, concepts and methods for sampling and analyzing spatial animal data. These topics will then be illustrated through practical analytical exercises and finally applied to the students' own data, or data provided to them by the lecturers.	**Workload:** Attendance time: 19 h Self-study time: 41 h

Course: Introduction to spatial data and analyses in animal ecology (Lecture) *Contents*: Overview of most important theories and concepts in spatial (animal) ecology, summary of data types, how to sample them and methodological approaches to analyze them.	
Course: Introduction to spatial data analysis in R (Exercise) *Contents*: Hands-on exercises in R to demonstrate the concepts, data and methods covered in the lecture.	
Course: Applying and evaluating spatial analytical tools in animal ecology (Seminar) *Contents*: Application and discussion of concepts and tools covered in 1.) and 2.) and critical review of their advantages and limitations for the students' own data and research questions	
Examination: Term Paper (max. 10 pages) **Examination requirements:** Understanding of basic theories and concepts in spatial (animal) ecology; general knowledge of data types, sampling procedures and analytical approaches for spatial data; basic abilities in using the statistical software environment *R* to handle, manipulate and analyze spatial ecological data; PhD students write a report on their analyses including a critical evaluation of the utilized data, tools and results.	2 C

Admission requirements: membership in RTG 2300. Other PhD students can be admitted if free places are available.	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Niko Balkenhol
Course frequency: every three years starting in winter semester 2017/18	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students:	

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Georg-August-Universität Göttingen **Module P.GRK2300.D3: Use of stable isotope technologies in forest ecosystems research**	2 C 2 WLH

Learning outcome, core skills: PhD students • acquire knowledge of the chemical and physical background for advanced field and laboratory applications of stabile isotopes in forest ecosystem research • have expertise in the evaluation of natural occurring or experimentally applied stable isotopes of H, C, N, O and S, focusing on soil science, plant physiology and food web processes • improve their review capacity by evaluating published studies on stabile isotope issues**.**	**Workload:** Attendance time: 28 h Self-study time: 32 h

Course: Use of stable isotope technologies in forest ecosystem research (Seminar) *Contents*: In the seminar chemical and physical background for stabile isotope applications in natural science are introduced. Students will present and review their own experimental approaches and data sets as well as review published studies on in situ stable isotope applications.	2 WLH
Examination: Oral report with written elaboration (15 minutes) **Examination requirements:** PhD students have an understanding of the chemical and physical background for advanced field and laboratory applications of stabile isotopes in forest ecosystem research. The have expertise in the evaluation of natural occurring or experimentally applied stable isotopes.	2 C

Admission requirements: membership in RTG 2300. Other PhD students can be admitted if free places are available.	**Recommended previous knowledge:** advanced knowledge in biogeochemistry
Language: English	**Person responsible for module:** Dr. Jens Dyckmans
Course frequency: every three years starting in WS 2018/19	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.D4: Molecular methods in ecology**	2 C 2 WLH

Learning outcome, core skills: PhD students will acquire a deepened knowledge on and competence in • workflow for molecular sample analyses • DNA extraction • barcoding • sequence analysis	**Workload:** Attendance time: 28 h Self-study time: 32 h

Course: Molecular methods in ecology (Exercise,Seminar) *Contents*: In this course, PhD students obtain a list of literature to prepare themselves for practical work. They draft a work flow for molecular sample analysis. In the practical part, the PhD students learn to extract environmental samples and produce clean DNA, barcode it and analyze sequences.	2 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** PhD students can draft a workflow for molecular sample analyses and are familiar with the extraction of environmental samples and can produce clean DNA, barcode it and analyze sequences	2 C

Admission requirements: membership in RTG 2300. Other PhD students can be admitted if free places are available.	**Recommended previous knowledge:** MSc and basic knowledge in ecology
Language: English	**Person responsible for module:** Prof. Dr. Andrea Polle
Course frequency: each winter semester	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:**
Maximum number of students: 4	

Georg-August-Universität Göttingen **Module P.GRK2300.D5: Statistical modelling and advanced regression analyses**	2 C 2 WLH

Learning outcome, core skills: The PhD students are familiar with various types of advanced regression models and possibilities to identify the most appropriate model for a given research question. They can apply the chosen model in the statistical software R, check the adequacy and validity of the model, and interpret the results they have achieved.	**Workload:** Attendance time: 28 h Self-study time: 32 h

Course: Statistical modelling and advanced regression analyses *Contents*: Generalized linear models, mixed models, spatial regression models, generalized additive models, quantile regression, Bayesian and likelihood-based inference, structured additive regression *Literatur:* Fahrmeir, Kneib, Lang, Marx (2013): Regression – Models, Methods and Applications, Springer.	2 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** The students demonstrate their ability to choose, apply, check and interpret advanced regression modelling techniques in a scientific project. The results of their statistical analyses are presented in a final colloquium where the students also demonstrate their ability to discuss their results with their fellow students.	2 C

Admission requirements: membership in RTG 2300. Other PhD students can be admitted if free places are available.	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Prof. Dr. Thomas Kneib
Course frequency: every three years starting in winter term 2018/19	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.D6: The Economics of Mixed Forests**	2 C 2 WLH

Learning outcome, core skills: By the end of this course the students shall be able to build basic bio-economic models to investigate economic consequences of species admixture. To this end, they shall gain basic knowledge in economic theory needed for a sound analysis of mixed forests. Students shall be able to critically assess economic valuation of mixed forests in their own research and in the scientific literature.	**Workload:** Attendance time: 24 h Self-study time: 36 h

Course: The Economics of Mixed Forests (Seminar) *Contents*: The seminar will first provide an overview on economic theory related to mixed forests. Theoretic input will be accompanied by practical exercises based on Excel and R. Individual exercises shall finally allow for building a simple bio-economic model for example stands. Based on this knowledge students shall critically analyze and discuss the methods used in selected scientific articles related to the economics of mixed forests. Literature: Pretzsch, Forrester, Bauhus (eds) (2017): Mixed-species forests. Ecology and Management, Springer.	2 WLH
Examination: Oral Presentation (approx. 20 minutes), not graded **Examination requirements:** Understanding of basic economic theories and concepts in forest economics and basic abilities in building a bio-economic model in Excel or R. The results are presented in a final colloquium where students demonstrate the ability to critically discuss economic methods applied in interdisciplinary research (own research topics and/or published journal articles).	2 C

Admission requirements: membership in RTG 2300. Other PhD students can be admitted if free places are available	**Recommended previous knowledge:** Basic knowledge in programming with Excel and R
Language: English	**Person responsible for module:** Prof. Dr. Carola Paul
Course frequency: every three years starting in winter term 2021/22	**Duration:** 1 semester[s]
Number of repeat examinations permitted: cf. examination regulations	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.D7: Methods of biodiversity-ecosystem functioning research**	2 C 2 WLH

Learning outcome, core skills: Students get an understanding of biodiversity-ecosystem functioning research, its implementation and motivation and learn to discuss current research findings that are related to their own subproject's research questions.	**Workload:** Attendance time: 28 h Self-study time: 32 h

Course: Methods of biodiversity-ecosystem functioning research (Exercise,Seminar) *Contents*: This seminar takes a look at the motivation (why BEF?) and implementation (how BEF?) of biodiversity-ecosystem functioning research (BEF), the design of BEF experiments, and the relevance of multitrophic interactions and multifunctionality for BEF research and its practical application. The PhD students provide input on and discuss selected topics of BEF research based on current research findings that are connected to the general topic of their specific subproject. Based on own data from each subproject of the RTG 2300, the relevance of interdisciplinary research will be evaluated by analyzing multifunctional relationships in R.	2 WLH
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** The PhD students demonstrate their ability to choose, apply, interpret, and discuss own and other scientists' research data in the context of biodiversity-ecosystem functioning research.	2 C

Admission requirements: membership in RTG 2300. Other PhD students can be admitted if free places are available	**Recommended previous knowledge:** Basic knowledge in ecology
Language: English	**Person responsible for module:** Prof. Dr. Andreas Schuldt
Course frequency: every three years starting in Winter term 2021/2022	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** 1 - 3
Maximum number of students: 15	

Georg-August-Universität Göttingen **Module P.GRK2300.E: Data management with GRO.Data**	2 C

Learning outcome, core skills: PhD students • learn and understand the FAIR data principles (https://www.force11.org/group/fairgroup/fairprinciples) • learn and understand basic curation tasks against the background of the data life cycle (data management planning, documentation, preservation, data publication and licenses) • understand purpose, types, and application of metadata and data standards • learn the structure of a dynamic web based data repository • understand GRO.data, the repository for the publication of research data at the Göttingen Campus • know how to integrate GRO.data with local tools or workflows • know how to manage and share data with GRO.data	**Workload:** Attendance time: 50 h Self-study time: 10 h

Course: Data management with GRO.Data (Seminar) *Contents*: The aim of this workshop style course is to introduce the FAIR data principle and embed resulting curation tasks into research workflows. One focus will be on data sharing and the role of data documentation and the role of respective repositories using the example of GRO.data.	
Examination: Oral Presentation (approx. 20 minutes) **Examination requirements:** List of all datasets used in the manuscripts/papers and the dissertation including metadata and links to the datasets in the repositories. PhD students • understand the structure of a dynamic data repository in particular GRO.data • know how to manage and share their data with GRO.data • know how to meet FAIR based curation requirements with GRO.data • know how to upload their data to GRO.data and download other data from the RTG • have uploaded all data(sets) used in the manuscripts/papers and the dissertation to GRO.data or another publicly available data management platform	2 C

Admission requirements: Membership in RTG 2300	**Recommended previous knowledge:** none
Language: English	**Person responsible for module:** Dr. Jens Nieschulze
Course frequency: Every three years starting in WS 2018/191	**Duration:** 1 semester[s]
Number of repeat examinations permitted:	**Recommended semester:**

cf. examination regulations	1 - 4
Maximum number of students: 15	