Eberswalde University for Sustainable Development

Module catalogue

International Forest Ecosystem Management (IFEM) (B.Sc.)

Valid from 2021/2022

Inhalt

M   Botany

Semester:	1
Module coordinator	Prof. Dr. Harald Schill (harald.schill@hnee.de)
Status:	Mandatory module
Goal:	Students acquire basic knowledge about morphological structures, cytology, anatomy, physiological processes and systematic relationships of plants with a focus on woody plants.
Examination form:	Written exam 120 min (100%) and Identification certificate (not graded)
ECTS-Credits:	6
SWH:	4

Module component 1   General forestry botany

Semester:	1
Coordinator:	Prof. Dr. Harald Schill
Lecturer:	Prof. Dr. Harald Schill
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Teaching form:	Lecture (30 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (70%)
Goal:	The students are able to describe the inner and outer structure of plants with a focus on woody/forest plants and to understand their essential life processes.
Content:	Overview on the plant kingdom, morphology of higher plants: plant life forms, focus on trees; cytology: structure of the plant cell; genetics; reproduction; anatomy/histology: construction of plant organs: leaf, stem, root; systematics: fungi, mosses, ferns, seed plants.

Recommended related elective modules:

Competences: Technical competence (90%) Methodological competence (10%)

Literature: Raven, P.H.; Evert, R.F.; Eichhorn, S.E. (2006): Biologie der Pflanzen. de Gruyter

Jäger, E.J.; Neumann, S.; Ohmann, E. (2003): Botanik. Springer Spectrum;

Bresinsky, A. et al. (2008): Strasburger - Lehrbuch der Botanik. Springer Spectrum

Schütt, P.; Schuck, H.J.; Stimm, B. (1992): Lexikon der Forstbotanik. ecomed Verlag, Landsberg

Module component 2	Morphology / Ecology of woody plants

Semester:	1
Coordinator:	Prof. Dr. Harald Schill
Lecturer:	Prof. Dr. Harald Schill
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Teaching form:	Lecture (15 h), Practical exercise (15 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (30%) and Identification certificate (not graded)
Goal:	Students will be able to apply knowledge of the morphological structure of higher plants to the identification of woody plants in winter condition.
Content:	Fundamentals of plant physiology and woody morphology.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (50%)
Literature:	Raven, P.H.; Evert, R.F.; Eichhorn, S.E. (2006): Biologie der Pflanzen. de Gruyter
	Literature for the determination of woody plants in winter condition will be announced at the beginning of the event.

M Ecosystem-based nature conservation and sustainable development

Semester:	1
Module coordinator:	Prof. Dr. Pierre Ibisch (pierre.ibisch@hnee.de)
Status:	Mandatory module
Goal:	The students are enabled to actively and vividly take part in the discussions and in the contemporary debates about the topical questions and concerns of sustainability, nature ressource management and nature conservation. Their knowledge is based on a complex and integrative reflection and acknowledgement of ecosystems, in which humans systems are embedded.
Prüfungsformen:	Written exam 90 min (50%), Project presentation (50%)
ECTS-Credits:	6
SWS:	4

Module component 1 — Biological diversity, nature conservation & ecosystem management

Semester:	1
Coordinator:	Prof. Dr. Pierre Ibisch
Lecturer:	Prof. Dr. Pierre Ibisch
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Teaching form:	Lecture (15h), Seminar (15 h), Self-study (45 h)
Language:	German/ English
Module type:	blocked
Examination form:	Written exam (50%)

Goal:	The students are enabled to actively and vividly take part in the discussions and in contemporary debates about the topical questions and concerns of sustainability, nature ressource management and of nature conservation. Their knowledge is based on a complex and integrative reflection and acknowledgement of ecosystems, in which humans systems are embedded.
	Based on the elementary knowledge of the evolution, dimensions and status quo of biological diversity, as well as the the anthropological, historical, evolutionary, and dynamic reflection of nature, the students can critically assess the topical challenges of nature conservation.
	They understand the importance of the ecosystem approach to modern biodiversity and natural resource management and have knowledge of current approaches to maintaining functional forest ecosystems in an era of rapidly increasing global change.
Content:	Biodiversity is the object of protection of modern nature conservation and embraces more than the mere richness of species, especially the aspects of functionality and of dynamic ecosystems. Nature conservation is described as an interdisciplinary challenge and cultural accomplishment: in awareness and consideration of the socioeconomic conditions we have to take knowledge-based decisions and value judgements about biodiversity conservation.
	The cultural, socioeconomic and political frameworks and initiatives of nature conservation are explained by way of example. Relevant guiding questions refer to the self-conception, functioning and the goals of modern nature conservation, from which prioritary methods and measures can be derived. Special attention will be given to the current challenges of dealing with forest ecosystems that are under severe pressure from use and climate change.
Recommended related elective modules:	
Competences:	Technical competences (100%)
Literature:	Ibisch, P.L., H. Molitor, A. Conrad, H. Walk, V. Mihotovic & J. Geyer (eds.) (2018): Der Mensch im globalen Ökosystem: Eine Einführung in die nachhaltige Entwicklung. Oekom Verlag, München, 416 pp. (ISBN 978-3-96238-011-3).
	Ibisch, P.L., H. Molitor, A. Conrad, H. Walk, V. Mihotovic & J. Geyer (eds.) (2019): Humans in the global ecosystem. An introduction to sustainable development. Oekom Verlag, München, 409 pp. (ISBN 9783962381172).
	Ibisch, P.L., S. Kreft & V. Luthardt (eds.) (2012): Regionale Anpassung des Naturschutzes an den Klimawandel: Strategien und methodische Ansätze zur Erhaltung der Biodiversität und Ökosystemdienstleistungen in Brandenburg. Hochschule für nachhaltige Entwicklung Eberswalde, Eberswalde (ISBN 978-3-00-038210-9) (online http://project2.zalf.de/inkabb/projekte/teilprojekt-16-1/teilprojekt-16).
	Other current literature will be presented in the lecture.

Module component 2	**With nature – for humans: Introduction to sustainable development**
Semester:	1
Coordinator:	Prof. Dr. Heike Walk

Lecturer:	Prof. Dr. Heike Walk, Dr. Evelyn Wallor
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Teaching form:	Lecture (10 h), Practical exercise (10 h), Project (10 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Project presentation (50%)
Goals:	The students approach and reflect the interdisciplinary, interconnected theoretical foundations of the concept of sustainable development and can apply their knowledge and lessons learned to practical case studies.
Content:	The sustainability discourse is critically reflected upon, taking into account historical and theoretical aspects. A basis for the presented concept of sustainable development is essentially the systems theory approach, which assumes a world of 'nested' systems. Discussed are e.g. climate system, geosystems, ecosystems, the human system (with reference to biological, cultural, social, economic, ethical aspects). On the basis of this theoretical analysis, project work on topics of sustainable development in Eberswalde and the region is conceived in interdisciplinary groups and substantiated with formats of research and practice-oriented learning and design.
Recommended related elective modules:	
Competence	Technical competence (60%), Methodological competence (30%), Social competence (10%)
Literature:	Ibisch, P. L./ Molitor, H./ Conrad, A./ Walk, H./ Mihotovic, V./ Geyer, J. (2018): Der Mensch im globalen Ökosystem. Eine Einführung in die nachhaltige Entwicklung, München: oekom
	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) (Hrsg.) (o.J.): Umweltpolitik. Agenda 21. Konferenz der Vereinten Nationen für Umwelt und Entwicklung im Juni 1992 in Rio de Janeiro. – Dokumente -. Bonn.
	Bundesregierung (2002): Nationale Nachhaltigkeitsstrategie "Perspektiven für Deutschland" (www.bmu.de/files/pdfs/allgemein/application/pdf/nachhaltigkeit_strategie.pdf).
	Bund für Umwelt und Naturschutz Deutschland, Brot für die Welt, Evangelischer Entwicklungsdienst (Hrsg.) (2008): Zukunftsfähiges Deutschland in einer globalisierten Welt. Ein Anstoß zur gesellschaftlichen Debatte. Bonn.
	Hauff, V. (1987): Unsere gemeinsame Zukunft. Der Brundtland-Bericht der Weltkommission für Umwelt und Entwicklung. Herausgegeben von der Weltkommission für Umwelt und Entwicklung. Greven.

Meadows D. et al. (1972): Die Grenzen des Wachstums. Bericht des Club of Rome zur Lage der Menschheit. Deutsche Verlags-Anstalt, Stuttgart.

Meadows D. et al. (2007): Grenzen des Wachstums. Das 30-Jahre-Update; Signal zum Kurswechsel. Hirzel, Stuttgart.

Reinmann, G/ Lübcke, E./ Heudorfer, A. (Hrsg.) (2019): Forschendes Lernen in der Studieneingangsphase. Empirische Befunde, Fallbeispiele und individuelle Perspektiven. Berlin: Springer VS

Statistisches Bundesamt (2008): Nachhaltige Entwicklung in Deutschland. Indikatorenbericht 2008. Wiesbaden (http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Content/ Publikationen/Fachveroeffentlichungen/UmweltoekonomischeGesamtrechnungen/ Indikatorenbericht2008,property=file.pdf).

M   Soil science and site ecology

Semester:	1
Module coordinator:	Prof. Dr. Winfried Riek (winfried.riek@hnee.de)
Status:	Mandatory module
Goal:	The students are enabled to apply methods and techniques of soil science and site ecology in practice. They will be able to understand forest sites as ecosystems and to analyse and document scientific data obtained in the ecosystems.
Examination form:	Written exam 120 min (100%)
ECTS-Credits:	6
SWH:	4

Module component 1   Soil Science

Semester:	1
Coordinator:	Prof. Dr. Winfried Riek
Lecturer:	Prof. Dr. Winfried Riek
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Teaching form:	Lecture (30 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (50%)
Goal:	Students have a basic understanding of the origin, the structure and the characteristics of different (forest) soil types and are enabled to use this knowledge to understand the functions of soils in the ecosystem.

Content:	In this lecture geological and mineralogical fundamentals of soil science are taught. The focus is set on the development of soils: from pedogenetic factors and a detailed presentation of pedogenetic processes to the resulting soil characteristics. The soil classification in Germany is presented in broad strokes. In addition, chemical and physical soil properties like acidity, cation exchange, C/N ratio, soil density, soil structure, texture and porosity are explained using examples and are intensively treated. Selected field and laboratory methods for soil identification will be taught. The students are enabled to characterize soils according to their morphological, chemical and physical characteristics and to derive parameters of water and nutrient budget.
Recommended related elective modules:	Exercises in soil science und site ecology
Competences:	Technical competence (70%) Methodological competence (30%)
Literature:	Blum, W. (2012): Bodenkunde in Stichworten. Borntraeger Verlagsbuchhandlung. Berlin Stuttgart.
	Herrmann, L. (2018): Bodenkunde Xpress. Ulmer UTB. Stuttgart.
	Riek, W. Stähr, F. (2004): Eigenschaften typischer Waldböden im Nordostdeutschen Tiefland unter besonderer Berücksichtigung von Brandenburg. Eberswalder Forstliche Schriftenreihe. Landesforstanstalt und MLUR (Hrsg.). Eberswalde Potsdam.
	Stahr, K., Kandeler, E., Herrmann, L., Streck, T. (2016): Bodenkunde und Standortlehre. Grundwissen Bachelor. Ulmer UTB, Stuttgart.

Module component 2 — Site and vegetation ecology

Semester:	1
Coordinator:	Prof. Dr. Winfried Riek
Lecturer:	Prof. Dr. Winfried Riek et al.
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Teaching form:	Lecture (30 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (50%)
Goal:	Students are enabled to assess forest sites based on climatological, geological and pedological characteristics and on vegetation survey. The basics of the northeast German site assessment method (SEA95) are known. In addition,

students are also familiar with the nomenclature of the international soil classification and know globally applicable methods of site ecological assessment.

Content: The focus of the lecture is the heat-, water- and nutrient-balance of forest ecosystems and their characterization in terms of growth potentials and risks. Site ecological characteristics as effective rooting zone, plant-available water, nutrient stocks, acid-base status, buffer-capacity and humus status are defined and are defined and simple field methods for their estimation and evaluation explained. The special site assessment method in the Northeastern German lowlands (SEA95) and its importance for forest management is explained. Another focus is on soils of other climates, their systematics and ecological properties, which are described on the basis of the international soil classification system (WRB). The possibility of bioindication by using local plant associations are presented as well as relationships between climate and vegetation zones in a global perspective.

Recommended related elective modules: Exercises in soil science & site ecology

Competences: Technical competence (70%) Methodological competence (30%)

Literature: Arbeitskreis Standortskartierung in der Arbeitsgemeinschaft Forsteinrichtung (2016): Forstliche Standortsaufnahme. Begriffe, Definitionen, Einteilungen, Kennzeichnungen, Erläuterungen.

Ellenberg, H.; Weber, H. E.; Düll, R.; Wirth, V.; Werner, W.; Paulißen, D. (1992): Zeigerwerte von Pflanzen in Mitteleuropa. Scripta Geobotanica Bd. 18, Goltze Verlag. Göttingen.

Gauer, J., Aldinger, E. (2005): Waldökologische Naturräume Deutschlands Forstliche Wuchsgebiete und Wuchsbezirke. Mitt. des Vereins für Forstliche Standortskunde und Forstpflanzenzüchtung. Nr.43. Stuttgart.

Riek, W. Stähr, F. (2004). Eigenschaften typischer Waldböden im Nordostdeutschen Tiefland unter besonderer Berücksichtigung von Brandenburg. Eberswalder Forstliche Schriftenreihe. Landesforstanstalt und MLUR (Hrsg.). Eberswalde, Potsdam.

Walter, H.; Breckle, S.-W. (1999): Vegetation und Klimazonen. UTB. Stuttgart.

Zech, W., Schad, P., Hintermaier-Erhard, G. (2014): Böden der Welt. Springer. Berlin Heidelberg.Riek, W. Stähr, F. 2004: Eigenschaften typischer Waldböden im
Nordostdeutschen Tiefland unter besonderer Berücksichtigung von Brandenburg. Eberswalder Forstliche Schriftenreihe. Landesforstanstalt und MLUR (Hrsg.). Eberswalde, Potsdam.

M   Fundamentals of zoology and wildlife biology

Semester:	1
Module coordinator:	Prof. Dr. Siegfried Rieger (siegfried.rieger@hnee.de)
Status:	Mandatory module
Goal:	Students will have an overview of wildlife biology and ecology with emphasis on mammals. Students are enabled to determine relevant animal phylum, groups of insects and pest species and to explain their biological and ecological features.
Examination form:	Written exam 120 min (100%)
ECTS-Credits:	6
SWH:	5

Module component 1   Zoology

Semester:	1
Coordinator:	Prof. Dr. Andreas Linde
Lecturer:	Prof. Dr. Andreas Linde
ECTS-Credits:	2
SWH:	1
Workload:	50 h / Semester
Teaching form:	Lecture (15 h), Self-study (35 h)
Language:	English
Module type:	continuous
Examination form:	Written exam (20 %)
Goal:	Students are enabled to identify relevant taxonomic groups of animals based on their anatomical characteristics. Students learn the biological and ecological features of various animal species and their significance for (forest) ecosystems.

Content:	In the first part of the lecture, a brief overview on animal physiology and animal adaptation to changing environmental conditions is given with a focus on forest ecosystems. The evolutionary development and anatomial characteristics of different animal groups, always with an applied focus on forest related subjects will be presented and specific properties concerning anatomy, biology, and ecology will be presented and discussed. Focus is on animal groups of special significance for international forestry students in order to enable them to identify important animal taxa in the field.
Recommended related elective modules:	
Competences:	Technical competence (90%) Methodological competence (10%)
Literature:	Urry et al. 2019: Campbell Biologie. Pearson. Wehner, R., Gehring, W. 2013: Zoologie. Thieme Verlag.

Module component 2	Wildlife biology

Semester:	1
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Teaching form:	Lecture (30 h), Self-study (20 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (40%)
Goal:	Students have an overview of the biology and ecology of wildlife with emphasis on mammals. Another focus is the knowledge of wildlife species and the overview on habits and lifestyle of native wildlife relevant for wildlife management.
Content:	The biology and ecology of selected wildlife species is presented with particular focus on mammals. Knowledge of wildlife biological species and an overview of the lifestyle of native wildlife relevant to wildlife management is provided. Besides the basics of habitat selection, food ecology or population dynamics, current research results are presented.

Recommended related elective modules:

Competences: Technical competence (80%) Methodological competence (20%)

Literature:

Andersen, R., Duncan, P., Linell, J.(Eds.) 1998. The European Roe Deer: The Biology of Success. Scandinavian University Press

Briedermann, L., 2009. Schwarzwild. Kosmos Verlag.

Bützler, W. 2001. Rotwild. BLV Verlag.

Campbell, A., Reece, J. 2002. Biologie. Spektrum Akademischer Verlag.

Clutton-Brock, T. H., Guiness F. E., Albon, S.D. 1982. Red Deer. University of Chicago Press.

Hennig, R., 2007. Schwarzwild. BLV Verlag.

Kurt, F. 2002. Das Reh in der Kulturlandschaft. Kosmos Verlag.

Meile, P., Ratti, P., Giacometti M. 2006. Der Steinbock. Salm Verlag

Schnidrig, R., Salm U. P. 2008. Die Gemse. Salm Verlag.

Siefke, A., Stubbe, Chr. 2008. Das Damwild. Neumann-Neudamm Verlag.

Stubbe, C. 2008. Rehwild. Kosmos Verlag.

Uloth, W., Piegert, H. 2009. Der Europäische Mufflon. Neumann – Neudamm Verlag

Wagneknecht, E. 2000. Rotwild. Nimrod Verlag.

Wehner, R., Gehring, W. 1995. Zoologie. Thieme Verlag.

Weitere Literatur wird zu Beginn der Veranstaltung bekannt gegeben.

Module component 3	Entomological fundamentals
Semester:	1
Coordinator:	Prof. Dr. Jörg Schumacher
Lecturer:	Prof. Dr. Jörg Schumacher
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Teaching form:	Lecture (30 h), Self-study(20 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (40 %)

Goal: The participants acquire basic knowledge on taxonomy, anatomy, physiology and biology of insects. The participants* will learn basic knowledge of the taxonomy, anatomy, physiology and biology of insects. They acquire the ability to know and identify the most common groups of insects found in Central European forest ecosystems. Special importance is attached to taxa that are important from a forest hygiene point of view. Furthermore, the aim is to familiarize students with the ecological position and functional diversity of insects.

Content: Basic characteristics and special features, including evolution, systematics and ecology, are taught in an introductory manner. A detailed part deals with the anatomical-morphological and physiological features as well as the associated biological functions of insects. A more detailed characterization is given in particular with regard to ontogeny, nutrition, reproduction and ethology. Based on systematics on the one hand and on ecology on the other hand, important taxonomic groups are presented and discussed. The main focus is on the functional specificity, the influence on forest health and the relationship to humans.

Recommended related elective modules:

Competences: Technical competence (80%) Methodological competence (20%)

Literature: Amann, G.: Kerfe des Waldes, 1995: 11. durchges. Aufl., Augsburg, Naturbuch-Verlag.

Carter, D.J.: Raupen und Schmetterlinge Europas, 1987. Berlin und Hamburg: Verlag Paul Parey.

Chinery, M., 1984: Insekten Mitteleuropas. Berlin und Hamburg: Verlag Paul Parey.

Grüne, S., 1979: Handbuch zur Bestimmung der europäischen Borkenkäfer. Hannover: Schaper Verlag.

Novak, V., Hrozinka, F., Stary, B., 1977: Atlas schädlicher Forstinsekten. Landwirtschaftsverlag Berlin.

Novak, V., Stary, B., Hrozinka, F., 1992: Atlas nützlicher Forstinsekten. 5., unveränd. Aufl., Stuttgart: Enke Verlag.

Wermelinger, B. 2017: Insekten im Wald. Hauptverlag. Eidg. Forschungsanstalt WSL.

M Fundamentals of social science economics

Semester:	1
Module coordinator:	Prof. Dr. Martin Welp (martin.welp@hnee.de)
Status:	Mandatory module
Goal:	Students are able to apply socioeconomical principles in the context of economic relations and the management of forest and forest service businesses.
Examination form:	Project presentation (100%)
ECTS-Credits:	6
SWH:	5

Module component 1 — Introduction to socioeconomics

Semester:	1
Coordinator:	Prof. Dr. Martin Welp
Lecturer:	Prof. Dr. Martin Welp, Prof. Dr. Wolf-Henning von der Wense NN
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Teaching form:	Lecture (25 h), Practical exercise (5 h) Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (50 %)
Goal:	Students are enabled to apply socioeconomical principles in the context of economic relations and the management of forest and forest service businesses.

Content:	This course introduces students to human dimension in nature and forests through an investigation of social, economic and cultural aspects of forest management and conservation. The course is also designed to provide students with a range of exercises to build their skills in research, presentations, and teamwork. The first part of the course covers basic theory and concepts, including: human-nature interactions, property regimes, social actors in forest management and conservation, cultural dimensions of forestry including different value systems, and models of social forestry. The module will furthermore introduce the students to selected management approaches and economic evaluations tools. Students will conduct group research and make a presentation on a selected socio-economic issue.
Recommended related elective modules:	
Competences:	Technical competence (25%) Methodological competence (25%) Social competence (25%) Personnel competence (25%)
Literature:	Sarukhán, J., Whyte, A., Hassan, R., Scholes, R., Ash, N., Carpenter, S. T., ... & Leemans, R. (2005). Millenium ecosystem assessment: ecosystems and human well-being.
	Katila, P., Galloway, G., Alfaro, R. I., Kanninen, M., Lobovikov, M., & Varjo, J. (2010). Forests and society-responding to global drivers of change. Vienna: IUFRO.

Module component 2:	Social science methods
Semester:	1
Coordinator:	Prof. Dr. Martin Welp
Lecturer:	Prof. Dr. Martin Welp
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Teaching form:	Lecture (35 h), Practical exercise (10 h), Self-study (30 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (50%)
Goal:	The students are capable to apply quantitative and qualitative methods in social sciences; moreover, they know how to interpret the results frome such analyses.

Content: The students are introduced to both quantitative and qualitative approaches in social research. Students will learn about survey design and methodology and the challenges related to obtaining unbiased results about opinions, attitudes and behaviour of the society or parts thereof. Surveys are a systematic way of asking people to volunteer information about their attitudes, behaviours, opinions and beliefs. Students will explore the range of areas in which surveys are used: surveys as a research method are widely used among others in public opinion polls and market research. The students will also be introduced to qualitative social science research methods, such as semi-structured interviews or focus groups and how such data is analyzed and interpreted.

The students will design a social science research project of appropriate scope, conduct it as well as analyze and present the results. Students will critically discuss the applied method, possible biases and other conceptual aspects of their project.

Recommended related elective modules:

Competences: Technical competence (20%) Media competence (20%) Methodological competence (20%) Social competence (20%) Personnel competence (20%)

Literature: Keith F. Punch. 2005. Introduction to Social Research. Quantitative and Qualitative Approaches. Sage Publications, London. 336 p.

Groves, R.M. et al. 2011. Survey Methodology, Wiley

Mayring, Philipp 2015. Qualitative Inhaltsanalyse: Grundlagen und Techniken. 12. Auflage. Weinheim: Beltz.

E Hunting theory

Semester:	1 and 2
Module coordinator:	Prof. Dr. Siegfried Rieger (siegfried.rieger@hnee.de)
Status:	Elective module
Goal:	The students are enabled to understand and put into practice fundamentals of wildlife biology and hunting, with special consideration of the ecosystem approach.
Examination form:	Written exam 90 min (100%)
ECTS-Credits:	6
SWH:	5

Module component 1 — Hunting theory I

Semester:	1
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger et al.
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	15 (+ 15 Fowis)
Teaching form:	Lecture (15 h), Practical exercise (15 h), Seminar (15 h), Self-study (30 h)
Language:	German
Module type:	partly-blocked
Examination form:	Written exam (50%)
Goal:	The student is enabled to apply fundamentals of game biology, hygiene, hunting legislation and practice in the context of ecosystem-oriented hunting. In this context, students can demonstrate expertly handling, use and technology of hunting and hunting relevant guns. Students know the rules of

hunting law and regulations of the arms law governing the use of hunting weapons, as far as they are necessary for obtaining a hunting license and hunting practice. They can judge issues of hunting in conformity with hunting law and assess the relationship between hunting law and forest/nature protection law.

Content: This subject gives in-depth fundamentals of the biology and ecology of species subject to hunting law and principles of relevant domestic animals. Other important topics are current methods of hunting, hunting practice, training and use of hunting dogs, wildlife diseases, treatment and utilization of hunted wild game, including the hygiene and safety regulations. In addition legal provisions for hunting licenses, hunting society, hunting grounds contracts, hunting protection, grant and refusal of hunting license, deer hunting and damage claims, charge and paid hunting license, open and close hunting season , wildlife trade, hunting weapons and others are treated. Another focus of this subject lies in the theoretical foundations for weaponry and handling of weapons. Students learn the important skills for safe handling of hunting arms (rifles and handguns) in small groups (seminar exercise). Based on this knowledge exercises for rifle shooting (standing buck, running boar), shotgun (clay pigeon) and pistols in a block course during the semester and on weekends are provided.

Recommended related elective modules: Moderne Jagdstrategien, Fortgeschrittene jagdliche Praxis

Competences: Technical competence (90%), Methodological competence (10%)

Literature: Current laws BJagdG und LJagdG

Blase, Richard (2017): Die Jägerprüfung. 32. Auflage; Verlag Quelle und Meyer.

Hespeler, Bruno (2004): Jagdwissen auf einen Blick. 2. Auflage; BLV Verlag

Krebs, Herbert (2020): Vor und nach der Jägerprüfung; 62. Auflage; BLV Verlag.

Kromschröder/Becker (1998): Vorbereitung auf die Jägerprüfung in Wort und Bild. 2000 Fragen und Antworten. Wild und Hund Leserservice

Wolfgang Lipps (2004): Jagdrecht in Brandenburg, Verlag Neudamm-Neudamm

Lipps, Wolfgang (2004): Jagdrecht in Brandenburg; Textausgabe mit Kommentar; Neumann-Neudamm Melsungen.

Mark Pückler (2002): Der Jäger und sein Recht, Band 5, Verlag: Kosmos (Franckh-Kosmos), Parey Zeitschriftenverlag

Seibt Siegfried (2017): Grundwissen Jägerprüfung. 3. Auflage; Kosmos Verlag

Module component 2 — Hunting theory II

Semester: 2

Coordinator: Prof. Dr. Siegfried Rieger

Lecturer: Prof. Dr. Siegfried Rieger

ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	15 (+ 15 Fowis)
Teaching form:	Seminar and Practical exercise (30 h), Self-study (45 h)
Language:	German
Module type:	partly-blocked
Examination form:	Written exam (50%)
Goal:	The student is enabled to apply fundamentals of game biology, hygiene, hunting legislation and practice in the context of ecosystem-oriented hunting. In this context, students can demonstrate expertly handling, use and technology of hunting and hunting relevant guns. Students know the rules of hunting law and regulations of the arms law governing the use of hunting weapons, as far as they are necessary for obtaining a hunting license and hunting practice. They can judge issues of hunting in conformity with hunting law and assess the relationship between hunting law and forest/nature protection law.
Content:	This subject gives in-depth fundamentals of the biology and ecology of species subject to hunting law and principles of relevant domestic animals. Other important topics are current methods of hunting, hunting practice, training and use of hunting dogs, wildlife diseases, treatment and utilization of hunted wild game, including the hygiene and safety regulations. In addition legal provisions for hunting licenses, hunting society, hunting grounds contracts, hunting protection, grant and refusal of hunting license, deer hunting and damage claims, charge and paid hunting license, open and close hunting season , wildlife trade, hunting weapons and others are treated. Another focus of this subject lies in the theoretical foundations for weaponry and handling of weapons. Students learn the important skills for safe handling of hunting arms (rifles and handguns) in small groups (seminar exercise). Based on this knowledge exercises for rifle shooting (standing buck, running boar), shotgun (clay pigeon) and pistols in a block course during the semester and on weekends are provided.
Recommended related elective modules:	Moderne Jagdstrategien Fortgeschrittene Jagdliche Praxis
Competences:	Technical competence (60%), Methodological competence (20%), Social competence (20%)
Literature:	Current laws BJagdG und LJagdG Blase, Richard (2017): Die Jägerprüfung. 32. Auflage; Verlag Quelle und Meyer. Hespeler, Bruno (2004): Jagdwissen auf einen Blick. 2. Auflage; BLV Verlag Krebs, Herbert (2020): Vor und nach der Jägerprüfung; 62. Auflage; BLV Verlag.

Kromschröder/Becker (1998): Vorbereitung auf die Jägerprüfung in Wort und Bild. 2000 Fragen und Antworten. Wild und Hund Leserservice

Wolfgang Lipps (2004): Jagdrecht in Brandenburg, Verlag Neudamm-Neudamm

Lipps, Wolfgang (2004): Jagdrecht in Brandenburg; Textausgabe mit Kommentar; Neumann-Neudamm Melsungen.

Mark Pückler (2002): Der Jäger und sein Recht, Band 5, Verlag: Kosmos (Franckh-Kosmos), Parey Zeitschriftenverlag

Seibt Siegfried (2017): Grundwissen Jägerprüfung. 3. Auflage; Kosmos Verlag

M   Ecology and wildlife management

Semester:	2
Module coordinator:	Prof. Dr. Andreas Linde (andreas.linde@hnee.de)
Status:	Mandatory module
Goal:	Students are enabled to identify the biotic components of forest ecosystems (insects, herbaceous plants, wildlife) and to analyze and understand the basic processes in ecosystems. They are able to contribute to the conservation of the complex structures and services of forest ecosystems, including wildlife management.
Examination form:	Project presentation (33%), Written exam 90 min (66%), Identification certificate (not graded)
ECTS-Credits:	6
SWH:	6

Module component 1   Ecology

Semester:	2
Coordinator:	Prof. Dr. Andreas Linde
Lecturer:	Prof. Dr. Andreas Linde, Prof. Dr. Winfried Riek, Prof. Dr. Harald Schill, Prof. Dr. Barbara Wolff
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Lecture (10 h), Practical exercise (10), Project (10 h), Self-study (20 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (33%)
Goal:	Students are enabled to identify, describe and interpret the abiotic and biotic components of ecosystems and their influence on forests. They acquire basic

knowledge of ecological processes and methods for analyzing ecosystems. They understand the driving factors for the development of ecosystems and its consequences. In a nutshell, students learn to translate ecological knowledge into practical applications regarding ecosystem analysis, management, and sustainable forest use. By analyzing forest sites with different managemen in practical field work, students learn to assess the effects of human activity (e.g. silviculture) on the complex forest ecosystem and its multi-functionality.

Content:

At the beginning, lectures convey basic knowledge of ecosystem composition and structure and mechanisms, by which organisms adapt to changing environmental conditions. This includes the dynamic development of ecosystems. Methods for the scientific investigation of (forest-)ecosystems are presented, discussed and used in the field: In the second half of the semester, students apply their knowledge in small teams, performing practical field work on experimental plots in various forest types. Under supervision and instruction of various experts, students analyze site conditions, the forest structur, as well as the vegetation and fauna of their plot. Students learn to organize and execute field work. Practical work resumes after the summer break (winter semester; module „Waldökologie und Waldmesslehre").

Recommended related elective modules:

Competences:

Technical competence (40%) Methodological competence (35%) Social competence (20%) Personnel competence (5%)

Literature:

Begon, Townsend: Ecology (John Wiley & Sons 2020).
Singer: Ecology in action (Cambridge Univ. Press, 2016)
Henderson, Southwood: Ecological Methods (Wiley-Blackwell 2016).

Module component 2 — Dendrology/ Plant identification

Semester:	2
Coordinator:	Prof. Dr. Harald Schill
Lecturer:	Prof. Dr. Harald Schill
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Lecture (15 h), Practical exercise (15 h), Self-study (20 h)
Language:	German
Module type:	continuous

Examination form:	Written exam (33 %) and Identification certificate (not graded)
Goal:	Students can apply identification literature and acquire basic species knowledge of woody and herbaceous plants.
Content:	This module covers the basics of plant systematics of selected herbaceous plant families and the morphology of shoot axis, flower and fruit. Further contents are practical exercises for plant identification as well as the vegetation of the world and forests of Europe.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (50%)
Literature:	Schmeil, O.; Fitschen, J. (2002): Flora von Deutschland. Quelle & Meyer, Wiebelsheim

Module component 3	Wildlife management

Semester:	2
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places: **Teaching form:**	- Lecture (15h), Seminar (15 h), Self-study (20 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (33 %)
Goal:	Students are enabled to combine basic knowledge of wildlife ecology with practical, application-oriented action and to evaluate the effects of their actions on wildlife populations and their habitat and the entire ecosystem. Building on this and on the knowledge acquired in the module Wildlife Biology and Zoology, the students should develop the ability to apply this ecological knowledge in such a way that management concepts in the field of wildlife management can be analysed or they can participate in the creation of these concepts themselves.

Content: The course will cover a variety of topics and case studies from the field of wildlife management with a focus on ecosystem-compatible management of cloven-hoofed game populations and resettlement of large predators. In this context, concrete ideas of factors influencing the size of wildlife populations and of population dynamics will be developed. The problem of recording and presenting wildlife populations will be illustrated by means of case studies. The mutual influence of wildlife and habitat will be illustrated. The importance of cloven-hoofed game in the forest ecosystem will be highlighted.

Recommended related elective modules:
Übungen zu Wildbiologie und Wildtiermanagement I und II

Wildbiologie

Competences: Technical competence (80%) Methodological competence (10%) Social competence (5%), Personnel competence (5%)

Literature: Anderson, S.,H. 1991: Managing our Wildlife Resources. Prentice Hall.

Begon, Harper, Townsend 2009: Ökologie, Springer Verlag.

Robin, K., Graf, R., Schnidrig R. 2017: Wildtiermanagement, Haupt Verlag

Herzog S. 2019: Wildtiermanagement, Quelle und Meyer Verlag

Sinclair, A.,R.E., Fryxell, J., M., Caughley, G. 2006. Wildlife Ecology, Conservation and Management. Blackwell Verlag.

M Digitalization and forest information technologies

Semester:	2
Module coordinator:	Prof. Dr. Jan-Peter Mund (jan-peter.mund@hnee.de)
Status:	Mandatory module
Goal:	Students are enabled to create and manage databases and geodatabases. They have basic knowledge in the acquisition of spatial and factual data from the environmental field and master the basic techniques of graphic visualization and spatial data presentation. Furthermore, they own practical skills in using various mathematical and statistical methods.
Examination form:	Project presentation (100%)
ECTS-Credits:	6
SWH:	5

Module component 1 — Data management

Semester:	2
Coordinator:	Dr. Evelyn Wallor
Lecturer:	Dr. Evelyn Wallor
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	-
Teaching form:	Lecture (15 h), Practical exercise (15 h), Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (50%)

Entry requirements: -

Goal: Students know the theoretical principles for database design and management. They know the importance and relevance of databases for administration, evaluation and processing of ecological data of different types and scales. They further know the standards and rules of database organization. The information stored in a database is always object-related and represents a specific part of the real world. Generally, objects are described by different attributes and have a specific relationship to one another. Based on this, the first step in creating a database is to define the data types and scales that are assigned to the object-related attributes. In a second step, the relationships between the described objects are analysed and implemented in the database structure. In practice, students can create data tables with their fields and corresponding field data types, and define relationships between the data tables. They are able to draw up queries for data evaluation, interpret query results and differentiate between query types. Students know how to control data entry using forms and can develop forms themselves. Finally, they can construct reports for the structured output of results.

Content: Using a database with an environmental focus and any spatial reference, the students learn the theoretical basis for distinguishing attribute-related data types and scales and how to link them into GIS connecting didactically all courses in this module. They acquire principles and normal forms of a proper database structure and analyze the relationships between the objects of a database. They will also get to know the essential elements of a database and their functions. In the application, students learn to import individual object-related data tables into a database management system and establish the necessary relationships between the tables based on their theoretical knowledge. Using simple scientific questions, they practice the evaluation of the data with the help of queries, whereby they get to know the application of criteria, the formulation of formulas and the grouping of data. Finally, students create forms taking into account the underlying database structure and draw up reports for a structured presentation of results.

Recommended related elective modules:
Waldökosystem Management und Analyse
Übungen zu Wildbiologie und Wildtiermanagement I
Agroforstsysteme
Walderschließung
Waldnutzung
Digital forest analysis
Future strategies in sustainable forest management
Biosphere reserves and ecosystem development
Forest landscape restoration

Competences: Technical competence (40%), Media competence (40%), Methodological competence (10%), Personnel competence (10%)

Literature: Lorenz Hölscher: Microsoft Access 2010 – Das Handbuch; Microsoft Press/O'Reilly. Köln 2010, ISBN 9783866451452

Said Baloui. Access 2003 Kompendium: Professionelles Arbeiten mit Daten. Markt + Technik Verlag. München 2004.

Said Baloui. Access 2002 Kompendium: Datenbank planen, entwickeln, optimieren. Markt + Technik Verlag. München 2001.

Andreas Stern: Keine Angst vor Microsoft Access! Datenbanken verstehen, entwerfen und entwickeln; Für Access 2003 bis 2010. Microsoft Press/O'Reilly. Köln 2011, ISBN 978366455481

Module component 2 — Geodata and geoinformatics

Semester:	2
Coordinator:	Prof. Dr. Jan-Peter Mund
Lecturer:	Prof. Dr. Jan-Peter Mund, NN
ECTS-Credits:	1
SWH:	1
Workload:	25 h / Semester
Max. study places: **Teaching form:**	- Lecture (15 h), Self-study (10 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (25%)
Entry requirements:	
Goal:	Students are familiarised with the basic theoretical knowledge in the field of applied geoinformatics and are enabled to explain the central concepts of geodata standards and geodata infrastructures.
Content:	This module introduces the fundamental methods and techniques of geodata handling and management with geographic information systems and provides an overview of application opportunities of GIS in forestry and environmental contexts. The following subjects will be covered in detail: spatial and factual data, GNSS and other localization principles and applications, coordinate and reference systems, geodata infrastructures, applied GIS methods in forestry, modern digital cartography and map layouts.
Recommended related elective modules:	Waldökosystem Management und Analyse Übungen zu Wildbiologie und Wildtiermanagement I Agroforstsysteme Walderschließung Waldnutzung Digital forest analysis Future strategies in sustainable forest management

Biosphere reserves and ecosystem development
Forest landscape restoration

Competences:	Technical competence (40%), Media competence (40%), Methodological competence (10%), Personnel competence (10%)
Literature:	Andrae, C.: Simple Features: Praxisnahe Standards für einfache Geoobjekte in Datenbanken und GIS. 1. Auflage. Wichmann: 2014.
	Dodsworth, E.: Getting Started with GIS: A LITA Guide. 1. Auflage. IGI Global, 2012.
	Kerski, J., Clark, J.: The GIS Guide to Public Domain Data. 1. Auflage. ESRI Press, 2012
	Mitchell, T., Emde, A, Christl, C.: Web Mapping mit Open Source-GIS-Tools. 1. Auflage. Köln: O'Reilly, 2008.
	Scally, R.: GIS for Environmental Management. 1. Auflage. ESRI Press, 2006
	Strobl, C.: Open Source GIS: Einführung und Übersicht. 1. Auflage. Herbert Wichmann, 2010
	In addition, an updated list of GIS literature and ecosystem related geospatial will be made available at the beginning of the course.

Module component 3	GIS exercises und tutorials
Semester:	2
Coordinator:	Prof. Dr. Jan-Peter Mund
Lecturer:	Prof. Dr. Jan-Peter Mund
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Practical exercise (30 h), Self-study (20 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (25%)
Entry requirements:	
Goal:	Students own practical basic knowledge in the field of applied geoinformatics and possess first skills to develop digital solutions to simple spatial questions using up-to-date GIS software relevant in forestry.

Content:
The practice-oriented module introduces the digital acquisition, processing, analysis and presentation of geodata using standard software products (ususal GIS Software products and webgis applications.

Utilizing provided online learning material (exercises, explanatory videos, screen-casts), the students acquire selected skills in the practical use of common geodata formats and types and are enabled to combine spatial and factual data in a meaningful way, as well as present them graphically and provide appropriate interpretations. Offline tutorials ensure a successful study progress.

In small study groups, students will carry out a collection, analysis and visualization of geospatial data of a particular forest ecosystem or other ecosystem in a joint GIS-project, whereby presentation techniques and the ability to work in a team are promoted as interdisciplinary key competencies.

Recommended related elective modules:
Waldökosystem Management und Analyse
Übungen zu Wildbiologie und Wildtiermanagement I
Agroforstsysteme
Walderschließung
Waldnutzung
Digital forest analysis
Future strategies in sustainable forest management
Biosphere reserves and ecosystem development
Forest landscape restoration

Competences:
Technical competence (20%) Media competence (30%) Methodological competence (40%) Personnel competence (10%)

Literature:
Andrae, C.: Simple Features: Praxisnahe Standards für einfache Geoobjekte in Datenbanken und GIS. 1. Auflage. Wichmann: 2014.
Burrough et al. (2015): Principles of Geographical Information Systems: Oxford University Press; Auflage: 3rd revised edition (23. April 2015).

Dodsworth, E.: Getting Started with GIS: A LITA Guide. 1. Auflage. IGI Global, 2012.
Heywood et al. (2011): An Introduction to Geographical Information Systems: Prentice Hal; Auflage: 4th revised edition (23. Juni 2011).

Kerski, J., Clark, J.: The GIS Guide to Public Domain Data. 1. Auflage. ESRI Press, 2012
Kresse, W. & Danko, D.M. (2012): Handbook of Geographic Information: Springer.
Mitchell, T., Emde, A, Christl, C.: Web Mapping mit Open Source-GIS-Tools. 1. Auflage. Köln: O'Reilly, 2008.
Scally, R.: GIS for Environmental Management. 1. Auflage. ESRI Press, 2006
Strobl, C.: Open Source GIS: Einführung und Übersicht. 1. Auflage. Herbert Wichmann, 2010
In addition, an updated list of GIS literature and ecosystem related geospatial will be made available at the beginning of the course

M Biometry, dendrometry and forest growths

Semester:	2
Module coordinator	Prof. Dr. Martin Guericke (martin.guericke@hnee.de)
Status:	Mandatory module
Goal:	The students are familiar with biometric and mathematical-statistical basics and test procedures of biometrics and dendrometry. They are able to methodically prepare and perform dendrometric examinations with different objectives and to analyze and interpret the collected data. They are able to conduct simple forest-ecological investigations. The students are able to evaluate quantitative and qualitative growth processes of single trees and forest stands in a differentiated way. They have knowledge about the influence of natural and anthropogenic factors on growth, mass and value yield as well as stand stability and structure.
Examination form:	Written exam 120 min (100%)
ECTS-Credits:	6
SWH:	6

Module component 1 — Biometry

Semester:	2
Coordinator:	Prof. Dr. Luis Miranda
Lecturer:	Prof. Dr. Luis Miranda
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Lecture (15 h), Practical exercise (15 h), Self-study (20 h)
Language:	English
Module type:	continuous

Examination form: Written exam (33%)

Entry requirements:

Goal: Students have basic knowledge in environmental data analysis and are able to design samples, prepare and clean up empirical data, calculate and present descriptive statistics, use statistical tests and procedures and generate, interpret and communicate graphical visualizations.

Content: The course introduces students to principles and methods of collecting and analyzing data in forest and environmental sciences and enables them to apply various descriptive and analytical methods in practice. The concept of random variables as well as typical probability distributions in the forest and environmental area are introduced. The main descriptive statistics are introduced theoretically and applied practically. In the field of inferential statistics, confidence intervals as well as parametric and non-parametric tests for comparing mean values and distributions are introduced. Students learn to use relevant statistical software and perform analytical exercises using forest measurement and observation data. Emphasis is placed on the graphical visualization of different data sets and their interpretation. The exercises are performed using the software R.

Recommended related elective modules:

Competences: Technical competence (40%) Media competence (30%) Methodological competence (30%)

Literature: diverse Autoren 2002, 2003. Einführung in die Biometrie. Band 1 bis 4. Senat der Bundesforschungsanstalten des Bundesministeriums für Verbraucherschutz, Ernährung und Landwirtschaft.

Burns, P. 2012. The R Inferno. Lulu.

Triola, M. F. 2018. Elementary Statistics. Pearson.

Gonick, L. and Smith, W. 1993. Cartoon Guide to Statistics. William Morrow Paperbacks

Wilks, D. 2011. Statistical Methods in the Atmospheric Sciences. Academic Press.

Sokal, R.R. & F.J. Rohlf 1995/2012. Biometry. Third or fourth edition. Freeman.

Stoyan, D. 1998. Stochastik für Ingenieure und Naturwissenschaftler. Wiley-VCH Verlag.

Module component 2 — Dendrometry

Semester: 2

Coordinator: Prof. Dr. Barbara Wolff

Lecturer:	Prof. Dr. Barbara Wolff
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Lecture (20 h), Practical exercise (10 h), Self-study (20 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (33%)
Entry requirements:	
Goal:	Students are skilled for the efficient and independent investigation, processing and analysis of simple mainly single tree-focused spatial forest data.
Content:	- introduction to scientific/technical principles of cartography and applied geodesy for forestry- relevant applications - parameters of forest mensuration for single trees - handling relevant measuring instruments of measurement and dendrometry - planning and realization of simple investigations in forests - analysis of forest data.
Recommended related elective modules:	
Competences:	Technical competence (60%) Methodological competence (30%) Personnel competence (10%)
Literature:	Andrae, C.: Simple Features: Praxisnahe Standards für einfache Geoobjekte in Datenbanken und GIS. 1. Auflage. Wichmann: 2014.
	Dodsworth, E.: Getting Started with GIS: A LITA Guide. 1. Auflage. IGI Global, 2012.
	Kerski, J., Clark, J.: The GIS Guide to Public Domain Data. 1. Auflage. ESRI Press, 2012
	Mitchell, T., Emde, A, Christl, C.: Web Mapping mit Open Source-GIS-Tools. 1. Auflage. Köln: O'Reilly, 2008.
	Scally, R.: GIS for Environmental Management. 1. Auflage. ESRI Press, 2006
	Strobl, C.: Open Source GIS: Einführung und Übersicht. 1. Auflage. Herbert Wichmann, 2010
	In addition, an updated list of GIS literature and ecosystem related geospatial will be made available at the beginning of the course.

Module component 3 — Forest growth

Semester:	2
Coordinator:	Prof. Dr. Martin Guericke
Lecturer:	Prof. Dr. Martin Guericke
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Lecture (24 h), Practical exercise (6 h), Self-study (20 h)
Language:	English
Module type:	continuous
Examination form:	Written exam (33%)
Entry requirements:	
Goal:	The students have knowledge about quantitative growth processes of single trees and forest stands. They have knowledge about the influence of natural and anthropogenic factors on growth, mass and value yield, stand stability and stand structures. The influence of silvicultural measurements can be assessed in a differentiated way, simple estimation and planning tools based on forest growth science can be applied.
Content:	Growth dynamics of different forest structures, tree species and tree species mixtures, forest growth comparisons and specifics between different forest structures in different regions of the world. Relationships between increment and growth functions in the context of diameter, height and volume growth. Influence of endogenous and exogenous factors on growth and yield of individual trees and forest stands. Influence of origin, association and thinning on the quantity (mass yield), quality (value yield) and stability (risk) of individual trees or entire stands and their stand structures. Examples of national and international forest growth prognosis and planning tools (yield tables and simulators), presentation of selected current research projects and research results, including the influence of climate change on forest growth.
Recommended related elective modules:	
Competences:	Technical competence (60%) Methodological competence (30%) Media competence (10%)
Literature:	Gadow, K.v. (2003): Waldstruktur und Wachstum, Universitätsdruck Göttingen, 241 S. ISBN: 978-3-930457-32-8.
	Pretzsch H (2002) Grundlagen der Waldwachstumsforschung. Blackwell Wissenschafts-Verlag, Berlin, Wien, 414 pp

Pretzsch, H. (2009): Forest Dynamics, Growth and Yield - From Measurement to Model
Springer-Verlag Berlin Heidelberg, 670 S. ISBN: 978-3-540-88306-7.

Pretzsch H (2001) Modellierung des Waldwachstums. Blackwell Wissenschafts-Verlag, Berlin, Wien, 336 pp

Kramer, H. & Akca, A. 1995: Leitfaden zur Waldmesslehre; 3. Auflage. J.D. Sauerländer's Verlag, Frankfurt/M. 266S.

Pretzsch, H. (2009): Forest Dynamics, Growth and Yield - From Measurement to Model
Springer-Verlag Berlin Heidelberg, 670 S. ISBN: 978-3-540-88306-7.

M   Forest utilisation

Semester:	2
Module coordinator	Prof. Dr. Dr. hc. Michael Mussong (Michael.mussong@hnee.de)
Status:	Mandatory module
Goal:	The students are enabled to use their basic socio-economic, organizational and technical knowledge for application in the field of forest utilization in an international context.
Examination form:	Written exam 120 min (100%)
ECTS-Credits:	6
SWH:	5

Module component 1 — Forest work, timber harvest and forest road planning

Semester:	2
Coordinator:	Prof. Dr. Dr. hc. Michael Mussong
Lecturer:	Prof. Dr. Dr. hc. Michael Mussong
ECTS-Credits:	4
SWH:	3
Workload:	100 h / Semester
Max. study places:	-
Teaching form:	Lecture (45 h), Self-study (55 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (60%)
Entry requirements:	
Goal:	Students are enabled to plan and supervise manual forest operations according to current standards and to contribute to the planning and implementation of resource protecting, sustainenabled harvest planning in forestry in an international context. Furthermore, students have basic knowledge in

designing rural roads for forest management and recreation purposes in an international context.

Content:	Theory of Forest Work: places the working person at the center of the content. Main focuses are humane and social aspects of (forest) work (occupational physiology, psychology, sociology, working environment conditions, occupational safety, pay). Timber harvesting: significance, objectives and restrictions of timber harvesting; harvesting technology and harvesting methods; RIL (reduced impact logging); planning process; execution and control. Development: soil as building ground and building material; parameters of forest development; general Development planning; development models; individual planning; construction; maintenance; development for recreational purposes
Recommended related elective modules:	Übungen zur Waldarbeit und Verfahrenstechnologie Walderschließung
Competences:	Technical competence (70%) Methodological competence (30%)
Literature:	Dietz, P., Knigge, W., Löffler, H. (1984): Walderschließung. Kessel Vlg, Remagen. DWA, 2005: Richtlinien für den ländlichen Wegebau. DWA-A904 Forstausrüsterkataloge: div. Firmen GUV: UVV Forsten (GUV-V C 51) KWF: Tagungsführer Morat, J. 2015: Der Forstwirt. Ulmer, Stuttgart. Ministry of Fisheries and Forests, 2013: Fiji Forest Harvesting Code of Practice. 2nd edition. Sohns, H. (2012): Moderne Holzernte. Ulmer, Stuttgart

Module component 2 — Raw material wood

Semester:	2
Coordinator:	Prof. Dr. Tobias Cremer
Lecturer:	Prof. Dr. Tobias Cremer
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Lecture (24 h), Practical exercise (6 h), Self-study (20 h)

Language:	Englisch
Module type:	fortlaufend
Examination form:	Klausur (40%)
Entry requirements:	
Goal:	Students know the structure and composition of wood, as well as relevant wood attributes. They know different ways of utilization of wood and are able to sort and provide wood based on this knowledge.
Content:	The module is dealing with the following contents: - Micro- and macroscopic structure of wood -Relevant wood characteristics (wood density, wood moisture) - Wood attributes, relevant for its' utilization - Measuring and sorting of wood in national and international context - utilization of wood
Recommended related elective modules:	Certification
Competences:	Technical competence (70%) Methodological competence (30%)
Literature:	Döring, C. (2013): Power from pellets. Berlin [u.a.], Springer, 223 p.
	Fonseca, M. A. (2005): The Measurement of Roundwood - Methodologies and Conversion Ratios. Wallingford, CABI
	Forest Products Laboratory. 2010. Wood handbook—Wood as an engineering material. General Technical Report FPL-GTR-190. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 508 p.
	Kaltschmitt, M., Hartmann, H. und Hofbauer, H. (2009): Energie aus Biomasse: Grundlagen, Techniken und Verfahren. Springer, 1030 S.
	Knigge, W. und Schulz, H. (1966): Grundriß der Forstbenutzung. Verlag Paul Parey, Hamburg und Berlin, 584 S.
	Rahmenvereinbarung für den Rohholzhandel in Deutschland: http://www.rvr-deutschland.de/
	Richter, C. (2015): Wood Characteristics. Description, Causes, Prevention, Impact on Use and Technological Adaptation. Cham, Springer International Publishing, 222 S.

E   Wildlife monitoring

Semester:	2 and 3
Module coordinator	Prof. Dr. Siegfried Rieger (siegfried.rieger@hnee.)
Status:	Elective module
Goal:	Students have ready-to-use knowledge regarding the most important wildlife survey methods. They can use these methods as a tool for long-term, goal-oriented recording and assessment of the status of wildlife populations.
Examination form:	Project presentation (50%), Work report (50%)
ECTS-Credits:	6
SWH:	4

Module component 1   Wildlife monitoring A

Semester:	2
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger; Dr. Frank Michler; Benjamin Gillich; Prof. Dr. Lubomir Blasko
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	6 (+6 Fowis)
Teaching form:	Seminar (10h), Project (10h), Practical exercise (10h), Self-study (45h)
Language:	German
Module type:	partly-blocked
Examination form:	Project presentation (50%)
Entry requirements:	-
Goal:	Students will be able to implement the knowledge provided with respect to key wildlife recording methods.

Content:	Building on the module "Zoological and wildlife biology basics" and the sub-module "Wildlife management", knowledge about the monitoring of regionally occurring animal species is taught and thus the basics of wildlife management are deepened. The focus is on the monitoring of native cloven-hoofed animals and large predators.
Recommended related elective modules:	
Competences:	Technical competence (50%) Media competence (10%) Methodological competence (40%)
Literature:	Breitenmoser, U., C. Breitenmoser-Würsten. 2008. Der Luchs. Ein Großraubtier in der Kulturlandschaft. Salm Verlag, Schweiz.
	Breitenmoser, U., Ch. Breitenmoser-Würsten, M. von Arx, F. Zimmermann, A. Ryser, Ch.Angst , A. Molinari-Jobin, P. Molinari, J. Linnell, A. Siegenthaler, J.-M. Weber. 2006. Guidelines for the Monitoring of Lynx. KORA Bericht Nr. 33e.http://www.kora.ch/pdf/reports/rep33e.pdf
	Breitenmoser, A. Molinari-Jobin, M. Giacometti. 2000. Raubtiere am Werk. Handbuch zur Bestimmung von Großraubtierrissen und anderen Nachweisen. Rotografica Verlag, Limena, Italien (in Deutsch vergriffen)
	Heurich, M. (Hrsg.). 2019. Wolf, Luchs und Bär in der Kulturlandschaft. Ulmer Verlag.
	Kaczensky, P. T. Huber, I. Reinhardt, G. Kluth. 2008 (Neuauflage). Wer War Es? Spuren und Risse von großen Beutegreifern erkennen und dokumentieren. Bayerischer Landesjagdverband, Molinari, P., U.
	Linnell, J. D. C., J. E. Swenson, A. Landa, T. Kvam. 1998. Methods for monitoring Europeanlarge carnivores - A worldwide review of relevant experience. NINA Oppdragsmelding,549:1-38
	Reinhardt, I., Kluth, G., Nowak, S., R. Myslajek. 2015. Standards for the monitoring of theCentral European wolf population in Germany and Poland. BfN-Skripten 398. 43 S.
	Reinhardt, I, Kaczensky, P., Knauer, F., Rauer, G., Kluth, G. Wölfl, S., Huckschlag, D., U. Wotschikowsky. 2015. Monitoring von Wolf, Luchs und Bär in Deutschland. BfN-Skripten 413. 96 S.
	Wölfl S., Schwaiger M. 2016. Luchs-Monitoring mittels Fotofallen. Extensiver Fotofalleneinsatz in Ostbayern im Monitoringjahr 2015/2016. Projektbericht im Auftrag des Bayerischen Landesamts für Umwelt, 40 Seiten.

Module component 2	Wildlife monitoring B
Semester:	3
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger; Dr. Frank Michler; Benjamin Gillich; Prof. Dr. Lubomir Blasko
ECTS-Credits:	3
SWH:	2

Workload:	75 h / Semester
Max. study places:	6 (+6 Fowis)
Teaching form:	Seminar (10h), Project (10h), Practical exercise (10h), Self-study (45h)
Language:	German
Module type:	partly-blocked
Examination form:	Work report (50%)
Entry requirements:	
Goal:	Students have ready-to-use knowledge regarding the most important wildlife survey methods. They can use these methods as a tool for long-term, goal-oriented recording and assessment of the status of wildlife populations.
Content:	Building on the module Monitoring of Wildlife I, in-depth knowledge of the monitoring of regionally occurring animal species is taught here. The focus in this sub-module is also on the monitoring of native cloven-hoofed animals and large predators.
Recommended related elective modules:	
Competences:	Technical competence (50%) Media competence (10%) Methodological competence (40%)
Literature:	Breitenmoser, U., C. Breitenmoser-Würsten. 2008. Der Luchs. Ein Großraubtier in der Kulturlandschaft. Salm Verlag, Schweiz.
	Breitenmoser, U., Ch. Breitenmoser-Würsten, M. von Arx, F. Zimmermann, A. Ryser, Ch.Angst , A. Molinari-Jobin, P. Molinari, J. Linnell, A. Siegenthaler, J.-M. Weber. 2006. Guidelines for the Monitoring of Lynx. KORA Bericht Nr. 33e.http://www.kora.ch/pdf/reports/rep33e.pdf
	Breitenmoser, A. Molinari-Jobin, M. Giacometti. 2000. Raubtiere am Werk. Handbuch zur Bestimmung von Großraubtierrissen und anderen Nachweisen. Rotografica Verlag, Limena, Italien (in Deutsch vergriffen)
	Heurich, M. (Hrsg.). 2019. Wolf, Luchs und Bär in der Kulturlandschaft. Ulmer Verlag.
	Kaczensky, P. T. Huber, I. Reinhardt, G. Kluth. 2008 (Neuauflage). Wer War Es? Spuren und Risse von großen Beutegreifern erkennen und dokumentieren. Bayerischer Landes-jagdverband, Molinari, P., U.
	Linnell, J. D. C., J. E. Swenson, A. Landa, T. Kvam. 1998. Methods for monitoring Europeanlarge carnivores - A worldwide review of relevant experience. NINA Oppdragsmelding,549:1-38
	Reinhardt, I., Kluth, G., Nowak, S., R. Myslajek. 2015. Standards for the monitoring of theCentral European wolf population in Germany and Poland. BfN-Skripten 398. 43 S.

Reinhardt, I, Kaczensky, P., Knauer, F., Rauer, G., Kluth, G. Wölfl, S., Huckschlag, D., U. Wotschikowsky. 2015. Monitoring von Wolf, Luchs und Bär in Deutschland. BfN-Skripten 413. 96 S.

Wölfl S., Schwaiger M. 2016. Luchs-Monitoring mittels Fotofallen. Extensiver Fotofalleneinsatz in Ostbayern im Monitoringjahr 2015/2016. Projektbericht im Auftrag des Bayerischen Landesamts für Umwelt, 40 Seiten.

E   Exercises in soil science and site ecology

Semester:	2 and 3
Module coordinator	Prof. Dr. Winfried Riek (winfried.riek@hnee.de)
Status:	Elective Module
Goal:	Students are enabled to classify forest soils and to derive site ecological parameters to assess the water and nutrient balance. They know the basics of soil sampling and are able to carry out laboratory analyses and to interpret the results critically. In addition, they are able to assess forest site conditions with the help of vegetation surveys.
Examination form:	Work report (100%)
ECTS-Credits:	6
SWH:	5

Module component 1   Field exercises in site and vegetation ecology

Semester:	2
Coordinator:	Prof. Dr. Winfried Riek
Lecturer:	Prof. Dr. Winfried Riek et al.
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	20
Teaching form:	Practical exercise (45 h), Self-study (30 h)
Language:	German
Module type:	continuous
Examination form:	Work report (50%)
Goal:	Students are enabled to classify soils in the field and to derive their site ecological properties with the help of field methods. In addition, they are able

to assess forest site conditions with the help of vegetation surveys. On the basis of these site ecological properties recommendations for the selection of tree species are derived.

Content:	As part of this course forest sites of various parent materials of the glacial series around Eberswalde are visited. The students assess soil physical properties and derive integrating parameters of the site specific water and nutrient balance. Both quantitative characteristics such as plant available water capacity and plant available base cation stock and qualitative properties such as the moisture and nutrient class in accordance with the nomenclature of the North German site investigation system (SEA95) are determined. Moreover, the process of vegetation survey and its site ecological evaluation (average indicator values, vegetation types) is learned. The course is complemented by a full-day excursion to the biosphere reserve Schorfheide-Chorin, where the relationships between forest structure, species diversity and site characteristics are taught in depth on the basis of about 15 various forest ecosystem types.
Recommended related elective modules:	
Competences:	Technical competence (30%) Methodological competence (40%) Social competence (15%) Personnel competence (15%)
Literature:	Anders, S.; Beck, W.; Bolte, A.; Hofmann, G.; Jenssen, M.; Krakau, U.-K. & Müller, J. (2002): Ökologie und Vegetation der Wälder Nordostdeutschlands. Verlag Norbert Kessel, Remagen.
	Arbeitskreis Standortskartierung in der Arbeitsgemeinschaft Forsteinrichtung (2016): Forstliche Standortsaufnahme. IHW-Verlag Eching bei München.
	Dierschke, H. (1994): Pflanzensoziologie. UTB. Stuttgart.
	Gauer, J., Aldinger, E. (2005): Waldökologische Naturräume Deutschlands – Forstliche Wuchsgebiete und Wuchsbezirke. Mitt. des Vereins für Forstliche Standortskunde und Forstpflanzenzüchtung. Nr.43. Stuttgart.
	Hofmann, G. (2001): Mitteleuropäische Wald- und Forst-Ökosystemtypen in Wort und Bild. CD-ROM, BLV, München.
	MLUV Brandenburg (2006): Bestandeszieltypen für die Wälder des Landes Brandenburg. Potsdam.
	Riek, W. Stähr, F. (2004): Eigenschaften typischer Waldböden im Nordostdeutschen Tiefland unter besonderer Berücksichtigung von Brandenburg. Eberswalder Forstliche Schriftenreihe. Landesforstanstalt und MLUR (Hrsg.). Eberswalde, Potsdam.
	SEA 95: Anleitung für die forstliche Standortserkundung im nordostdeutschen Tiefland (Standortserkundlungsanleitung). Bände 1-4. Eberswalde. (unveröffentlicht)

Module component 2 — Field and laboratory training in soil science

Semester:	3
Coordinator:	Prof. Dr. Winfried Riek

Lecturer:	Prof. Dr. Winfried Riek, Andrea Bruszies
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	20
Teaching form:	Practical exercise (30 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Work report(50%)
Goal:	Students know the basics of practical sampling and laboratory analysis in soil science. They are enabled to develop sampling approaches independently to select and carry out appropriate laboratory tests and to critically interpret the results. In the field they are enabled to derive appropriate estimation parameters for soil identification from morphological characteristics of the soil profile.
Content:	Methods for the investigation of soils are presented and applied together in the field. The use of drilling and sampling equipment will be practically explained and questions of the representativeness will be discussed. Basic soil characteristics are assessed with field techniques and soil samples are taken for laboratory analysis. After that, the lab technical devices are introduced, as well as the own implementation of soil physical and chemical analysis to derive soil parameters, such as particle size distribution, total pore volume, bulk density, pH-value, loss on ignition, cation exchange capacity, acid- / base buffer capacity and carbonate content. In groups different examination series will be evaluated and the soil science laboratory results are comparatively discussed and debated. The overall validity of the analysis carried out will be developed on the basis of all group results and their distribution and will be critically discussed.
Recommended related elective modules:	
Competences:	Technical competence (30%) Methodological competence (30%) Social competence (20%) Personnel competence (20%)
Literature:	Arbeitskreis Standortskartierung in der Arbeitsgemeinschaft Forsteinrichtung (2016): Forstliche Standortsaufnahme. IHW-Verlag Eching bei München. Riek, W., Russ. A. (2019): Waldbodenbericht Brandenburg. Eberswalder Forstliche Schrifteneihe Band 68. Potsdam und Eberswalde. Riek, W., Wolff, B. (2007): Bodenkundliche Indikatoren für die Auswertung der Bodenzustandserhebung im Wald (BZE II). Forschungszentrum Waldökosysteme der Universität Göttingen. Reihe B. Band 74. Göttingen. Schlichting, E., Blume, H.-P., Stahr, K. (1995): Bodenkundliches Praktikum. Pareys Studientexte 81. Berlin, Wien.

E   Dendroecology/ Plant identification

Semester:	2
Module coordinator	Prof. Dr. Harald Schill (harald.schill@hnee.de)
Status:	Elective Module
Goal:	Students know and understand basic physiological processes of plants. They are able to conduct plant ecological surveys.
Examination form:	Written exam (100%) and identification certificate (not graded)
ECTS-Credits:	6
SWH:	6

Module component 1   Dendroecology

Semester:	2
Coordinator:	Prof. Dr. Harald Schill
Lecturer:	Prof. Dr. Harald Schill et al.
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	40
Teaching form:	Lecture (20 h), Self-study (55 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (50%)
Goal:	Students are able to understand the basic physiologlogical processes of plant life and apply their importance to practical forestry and forest protection.
Content:	Fundamentals of abiotic growth conditions, photosynthesis and water transport with a focus on woody plants.

Recommended related elective modules:

Competences: Technical competence (70%) Methodological competence (30%)

Literature: Raven, P.H.; Evert, R.F.; Eichhorn, S.E. (2006): Biologie der Pflanzen. de Gruyter
Jäger, E.J.; Neumann, S.; Ohmann, E. (2003): Botanik. Springer Spectrum;
Bresinsky, A. et al. (2008): Strasburger - Lehrbuch der Botanik. Springer
Spectrum

Module component 2 — Plant identification

Semester: 3

Coordinator: Prof. Dr. Harald Schill

Lecturer: Prof. Dr. Harald Schill et al.

ECTS-Credits: 3

SWH: 2

Workload: 75 h / Semester

Max. study places: 25
Teaching form: Lecture (10 h), Practical exercise (20h), Self-study (45h)

Language: German

Module type: continuous

Examination form: Written exam(50%) and identification certificate (not graded)

Goal: Students are able to understand the fundamentals of applied plant ecology and apply them in practical exercises.

Content: Fundamentals of plant and vegetation ecology, practical plant identification and plant mapping .

Recommended related elective modules:

Competences: Technical competence (50%) Methodological competence (50%)

Literature: Lüder, R. (2020): Grundkurs Pflanzenbestimmung. Quelle & Meyer
Fischer, A. (2003): Forstliche Vegetationskunde. UTB

E   Forest ecosystem mangement and analysis

Semester:	2
Module coordinator	Prof. Dr. Pierre Ibisch (pierre.ibisch@hnee.de)
Status:	Elective Module
Goal:	The students will learn to analyze the situation of exemplary ecosystems and interprete and apply this knowledge to management.
Examination form:	Project report (50%) and Project presentation (50%)
ECTS-Credits:	6
SWH:	6

Module component 1   Diagnostic ecosystem analysis

Semester:	2
Coordinator:	Prof. Dr. Pierre Ibisch
Lecturer:	Prof. Dr. Pierre Ibisch, Dr. Stefan Kreft
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	25
Teaching form:	Practical exercise (45 h), Self-study (30 h)
Language:	German
Module type:	partly-blocked
Examination form:	Project report (50 %)
Entry requirements:	-

Goal:	The students are enabled to analyze the situation of exemplary ecosystems and interprete and apply this knowledge to management.
Content:	Ecosystem Diagnostics Analysis will be presented as a process, which allows for interpreting past and current changes in ecosystems as well as understanding cause-effect relationships. It is about the comprehension of systemically functioning mechanisms that cause specific changes, which can not be analyzed without a basic interdisciplinary understanding of diverse processes (e.g. scientific, historical, socioeconomical and political). A methodological concern is the exercise of an almost criminalistic inquiry for gathering signs and indicators needed for hypotheses regarding origin and impacts of observable ecosystemic changes. Specifically, the course deals with local ecosystems in in Northeastern Brandenburg, which are located within and outside of protected areas. The analysis of the ecosystems also comprises the identification and implementation of ecosystemic and socioeconomic indicators for the evaluation of potential changes in the system.
Recommended related elective modules:	
Competences:	Technical competence (60%) Methodological competence (30%) Social competence(10%)
Literature:	Ibisch, P.L. & P.R. Hobson (2014): Ecosystem Diagnostics Analysis. In: Ibisch, P.L. & P.R. Hobson (eds.): The MARISCO method: Adaptive MAnagement of vulnerability and RISk at COnservation sites. A guidebook for risk-robust, adaptive, and ecosystem-based conservation of biodiversity. Centre for Econics and Ecosystem Management, Eberswalde (ISBN 978-3-00-043244-6). 56-64. Ibisch, P.L., J. Kloiber & M.T. Hoffmann (2018): **Barnim-Atlas. Lebensraum im Wandel.** Eine Ökosystembasierte Betrachtung des Barnims zum Wohle der Menschen. Ehm-Welk-Verlag, Schwedt, 92 pp. (ISBN 978-3-946815-00-6).

Module component 2 — Ecosystem mangement in transformation countries

Semester:	2
Coordinator:	Prof. Dr. Pierre Ibisch
Lecturer:	Prof. Dr. Pierre Ibisch
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	25
Teaching form:	Practical exercise (30 h), Seminar (15 h) Self-study (30 h)
Language:	English
Module type:	blocked
Examination form:	Project presentation (50 %)

Entry requirements: -

Goal: The students learn on an exemplary basis of a region in a chosen transformation country to what extent socioeconomical and political transformation processes induce changes in the ecosystem and how corresponding knowledge is relevant to ecosystem management. The students are enabled to identify and implement ecosystemic and socioeconomic indidators for the evaluation of potential changes in the system.

Content: In addition to theoretical preparation and general introductions, students experience actual ecosystem situations in case study areas in Eastern Europe and learn to interpret them against the background of available knowledge on transformation processes and on the basis of exchange with local experts. Biosphere reserves are primarily visited as learning sites. It will be examined to what extent these can also serve as learning sites on questions of sustainable development under the condition of socio-political socio-economic transformation as well as global environmental change.

Recommended related elective modules:

Competences: Technical competence (50%) Methodological competence (30%) Social competence (20%)

Literature: Literature will be recommended or provided during the lecture.

E   Forest ecosystem analysis and wildlife biology

Semester:	2
Module coordinator	Prof. Dr. Pierre Ibisch (pierre.ibisch@hnee.de)
Status:	Elective module
Goal:	The students will learn to analyze the situation of exemplary ecosystems and interprete and apply this knowledge to management. The students are enabled to recognize and assess correlations between habitat and species, their biologyand the environment.
Examination form:	Project report (50%) und Oral report (50%)
ECTS-Credits:	6
SWH:	6

Module component 1   Ecosystem Diagnostics Analysis

Semester:	2
Coordinator:	Prof. Dr. Pierre Ibisch
Lecturer:	Prof. Dr. Pierre Ibisch, Dr. Stefan Kreft
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	25
Teaching form:	Practical exercise (45 h), Self-study (30 h)
Language:	German
Module type:	Partly-blocked
Examination form:	Project report (50 %)
Entry requirements:	-

Goal:	The students are enabeled to analyze the situation of exemplary ecosystems and interprete and apply this knowledge to management.
Content:	Ecosystem Diagnostics Analysis will be presented as a process, which allows for interpreting past and current changes in ecosystems as well as understanding cause-effect relationships. It is about the comprehension of systemically functioning mechanisms that cause specific changes, which can not be analyzed without a basic interdisciplinary understanding of diverse processes (e.g. scientific, historical, socioeconomical and political). A methodological concern is the exercise of an almost criminalistic inquiry for gathering signs and indicators needed for hypotheses regarding origin and impacts of observable ecosystemic changes. Specifically, the course deals with local ecosystems in in Northeastern Brandenburg, which are located within and outside of protected areas. The analysis of the ecosystems also comprises the identification and implementation of ecosystemic and socioeconomic indicators for the evaluation of potential changes in the system.
Recommended related elective modules:	
Competences:	Technical competence (60%) Methodological competence (30%) Social competence (10%)
Literature:	Ibisch, P.L. & P.R. Hobson (2014): Ecosystem Diagnostics Analysis. In: Ibisch, P.L. & P.R. Hobson (eds.): The MARISCO method: Adaptive MAnagement of vulnerability and RISk at COnservation sites. A guidebook for risk-robust, adaptive, and ecosystem-based conservation of biodiversity. Centre for Econics and Ecosystem Management, Eberswalde (ISBN 978-3-00-043244-6). 56-64. Ibisch, P.L., J. Kloiber & M.T. Hoffmann (2018): Barnim-Atlas. Lebensraum im Wandel. Eine Ökosystembasierte Betrachtung des Barnims zum Wohle der Menschen. Ehm-Welk-Verlag, Schwedt, 92 pp. (ISBN 978-3-946815-00-6).

Module component 2	**Field exercises in zoology and wildlife biology (Polen)**
Semester:	2
Coordinator:	Prof. Dr. Andreas Linde
Lecturer:	Prof. Dr. Andreas Linde, Prof. Dr. Siegfried Rieger et al.
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	25
Teaching form:	Seminar (25 h) Practical exercise (20 h) Self-study (30 h)
Language:	English

Module type:	blocked
Examination form:	Oral exam (50 %)
Entry requirements:	-
Goal:	The students are enabled to recognize and assess correlations between habitat and species, their biologyand the environment. The theoretical fundamentals of the sub-module in wildlife biology and zoology will be strengthened through practical exercises. The students acquire applicable knowledge of species (wildlife, birds, invertebrates, and plants).
Content:	Based on the module "Fundamentals of wildlife biology and zoology", knowledge of species in regions outside of Germany is mediated in this exercise as part of a weeklong excursion. Groups of vertebrates (e.g.amphibians, reptiles, birds, mammals), as well as invertebrates (mainly arthropods) are covered. Besides practical exercises on the identification of species (in the field) ion, knowledge of the biology and ecology, environmental claims, threats to the species and protected area management is mediated by means of presentations. With regard to vertebrate biology, the ecology and management of large mammals is the focus of attention.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (30%) Social competence (20%)
Literature:	Bährmann / Müller: Bestimmung wirbelloser Tiere.
	Current literature – adapted to the respective case studies - will be announced at the beginning of the module.

E Actors and projects of international (forest-)ecosystem management

Semester:	2
Module coordinator	Christoph Nowicki (christoph.nowicki@hnee.de)
Status:	Elective module
Goal:	The students get to know important international actors and projects of forest ecosystem management. They are able to analyze and reflect on the goals and approaches of the organizations. In addition, they are enabled to prepare themselves for future practical work abroad and to identify potential internship opportunities.
Examination form:	Protocol (100 %)
ECTS-Credits:	6
SWH:	5

Module component 1 — International actors in (forest-)ecosystem management

Semester:	2
Coordinator:	Christoph Nowicki
Lecturer:	Christoph Nowicki et al.
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places: **Teaching form:**	Lecture (15 h) Seminar (15 h) Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Protocol (50 %)
Entry requirements:	-

Goal:	The students get to know important international players in forest ecosystem management. They are able to analyze and critically reflect on the goals and approaches of the organizations. Students are able to categorize the actors in the international discourse of ecosystem and natural resource management and to understand their role.
Content:	The students will get to know different important international and global actors in forest management, development cooperation, research, policy advice or nature conservation (e.g. FSC, UPM, GIZ, BMU, Unique, FIB, EFI, OroVerde, EWS, FZS, TNC, NABU, Greenpeace, WWF etc.), who will be introduced personally by staff members of the respective organizations. They get familiar with the structure, objectives and the main activities of the organizations. In addition, possible perspectives regarding the requirements for the completion of an internship or the writing of a thesis or later professional activity are explained. The seminar thus provides an early opportunity to establish contacts with experts and professional fields for which the course qualifies. Some of the experts are IFEM alumni themselves and provide valuable advice on how to organize your studies - inside and outside the university.
Recommended related elective modules:	
Competences:	Technical competence (60%) Methodological competence (20%) Social competence (10%) Personnel competence (10%)
Literature:	Websites of the respective organizations

Module component 2 — Student research colloquium

Semester:	2
Coordinator:	Christoph Nowicki
Lecturer:	Christoph Nowicki et al.
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	
Teaching form:	Seminar(45 h), Self-study (30 h)
Language:	English
Module type:	blocked
Examination form:	Protocol (50 %)

Entry requirements: -

Goal: Students are enabled to analyse and critically discuss recent projects in forest ecosystem management in different regions of the world, considering relevant stakeholders. They have deepened their political, socioeconomic, geographical and ecological understanding in the context of forest ecosystem management, obtaining a broad and integral vision of the existing challenges and possible approaches of local actors.

Content: The course provides a platform for the presentation and discussion of diverse topics related to Forest Ecosystem Management facilitating the exchange of experiences and views, especially among IFEM students (2nd semester) preparing the practical internship semester abroad and those who concluded it (6th semester). The former give a lecture on their semester abroad, providing general political, geographic, ecological and socio-economic information about the host country, presenting sectors that include the use and conservation of natural resources. The specific findings of their research projects and ongoing activities of the host institutions will be presented.

In a small scientific colloquium, which is divided into different thematic areas, the results of the internship will be presented, critically discussed and firstly recorded by the students of the 2nd semester and summarized in a final colloquium volume. Students of the 2nd and 6th semester are also actively involved in the organization of the colloquium.

Recommended related elective modules:

Competences: Technical competence (30%) Methodological competence (20%) Media competence (20%) Social competence (20%) Personnel competence (10%)

Literature: Literature is covering the full range of international forest ecosystem management and will depend on the specific project. At the end of every presentation, references will be provided.

E   Foreign language

Semester:	2, 3, 4, 6
Module coordinator	NN (Language Centre)
Status:	Elective module
Goal:	Students are able to communicate in the target language at the specified level, both orally and in writing, understand authentic content, and successfully prepare for careers or further education at home or abroad through intercultural and social understanding.
Examination form:	Written exam and Oral report (percentage distribution changes according to level (CEFR))
ECTS-Credits:	6
SWH:	4

Module component 1   Foreign language

Semester:	2,3,4,6
Coordinator:	NN (Language Centre)
Lecturer:	NN (Language Centre)
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places: **Teaching form:**	- Seminar (60 h), Self-study (90 h)
Language:	
Module type:	continuous
Examination form:	Written exam and Oral report
Entry requirements:	-

Goal:	Students are able to communicate in the target language at the specified level, both orally and in writing, understand authentic content, and successfully prepare for careers or further education at home or abroad through intercultural and social understanding.
Content:	In modules based on the Common European Framework of Reference for Languages (CEFR), the skills of speaking, listening, reading and writing in the respective target language as well as intercultural competencies are promoted. According to the CEFR, the levels for languages are defined as follows:

A1 - Beginner
Can understand and use familiar, everyday expressions and very basic phrases aimed at the satisfaction of concrete needs. Can introduce him/herself and others and ask questions about personal details such as where he/she lives, people he/she knows and things he/she has, and can answer questions of this type. Can communicate in a simple way when interlocutors speak slowly and clearly and are prepared to help.
A2 - Basic knowledge
Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. personal and family information, shopping, work, local area). Can communicate in simple, routine situations involving simple and direct exchange of information on familiar and routine matters. Can describe in simple terms own background and education, immediate environment and things related to immediate needs.
B1 - Advanced use of language
Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling. Can deal with most situations encountered when traveling in the language area. Can express him/herself simply and coherently on familiar topics and personal areas of interest. Can describe experiences and events, dreams, hopes and ambitions, and give brief reasons or explanations for plans and opinions.
B2 - Independent use of language
Can understand the main ideas of complex texts on both concrete and abstract topics, including technical discussions in his/her field of specialization. Can communicate with sufficient fluency and spontaneity to hold a normal conversation with native speakers without strain for either party. Can express him/herself clearly and in detail on a wide range of subjects, explaining a point of view on a topical issue and giving the advantages and disadvantages of various options.
C1 - Proficiency
Can understand a wide range of demanding, longer texts and grasp implicit meaning. Can express him/herself fluently and spontaneously without having to search for clearly identifiable words more often. Can use the language effectively and flexibly in social and professional life or in training and study. Can express him/herself clearly, in a structured and detailed way on complex subjects, making appropriate use of various means of linking text.
Source: https://www.europaeischer-referenzrahmen.de/

Students will be enabled by the module to communicate in the target language at the specified level, both orally and in writing, to understand authentic content, and to prepare successfully for careers or further education at home or abroad through intercultural and social understanding.

Recommended related elective modules: Foreign language with next higher CEFR level

Competences: Technical competence (75%) Social competence (25%)

Literature: The instructor will provide literature and other materials.

E Exercises in wildlife biology and management I***

Semester:	2
Module coordinator	Prof. Dr. Siegfried Rieger (siegfried.rieger@hnee.de)
Status:	Elective module
Goal:	The students are able to understand wildlife biology and hunting basics in an ecosystem approach and to apply them in practice. The basics of wildlife management are taught through practical examples. Further, forest-relevant species groups will be treated with regard to their characteristics, biology and conservation status in the context of identification exercises.
Examination form:	Work report (50 %), Project presentation (50%)
ECTS-Credits:	6
SWH:	5

Module component 1 — Wildlife biology

Semester:	2
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger et al.
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	20 (+ 20 Fowis)
Teaching form:	Seminar (30 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Project presentation (50%)

Entry requirements:	-
Goal:	Students have an overview of the biology and ecology of wildlife with emphasis on mammals and birds. Another focus is the lifestyle of native wildlife.
Content:	Contents of this module are biology and ecology of selected species of wild animals. Students choose a species or species group from a predefined list. After extensive study of literature about the selected species, students are requested to hold a presentation on biology, ecology, current issues and management strategies. The preparation takes place in small groups and the presentation to the entire group.
Recommended related elective modules:	
Competences:	Technical competence (40%) Media competence (20%) Methodological competence (10%) Social competence (10%) Personnel competence (10%)
Literature:	Literature research is an important component of the project presentation.

Module component 2 — Exercises in wildlife management and zoology

Semester:	2
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger, Prof. Dr. Andreas Linde
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	10 (+ 10 Fowis)
Teaching form:	Seminar (15 h), Practical exercise (30 h), Self-study (30 h)
Language:	German
Module type:	blocked
Examination form:	Work report (50 %)
Entry requirements:	-
Goal:	Students can identify a range of regionally occurring species. They are familiar with the species' biological characteristics and protection status. Students have working knowledge of current recording methods. Students can identify problem areas of wildlife management, analyze the arguments of representatives of various stakeholders and develop solutions. They possess skills to collaborate in the creation of wildlife management plans.

Content:

Based on the module "Fundamentals of wildlife biology and zoology", here the knowledge of the regionally occurring species is taught and the fundamentals of wildlife management are deepened. Particular emphasis is on groups of vertebrates (e.g. amphibians, reptiles, birds) and invertebrates (ground dwelling arthropods, aquatic organisms). The module focuses on the identification of species (identification exercises, seminars), but also covers common recording methods exercised in practice in Bavaria (including limnological methods). In addition, knowledge of the organism´s biology, ecological requirements and their protectionis covered in the context of lectures, exercises and seminars. In addition, building on the theoretical fundamentals mediated in the sub-module "forest ecology and wildlife management", current examples of wildlife management are presented. Locally in various natural areas, the problem areas are identified, areas of conflict are analyzed and solutions are presented. In addition, different management strategies are presented.

Recommended related elective modules:

Competences:

Technical competence (40%) Media competence (5%) Methodological competence (15%) Social competence (15%) Personnel competence (5%)

Literature:

Anderson, S., H. 1991. Managing our Wildlife Resources. Prentice Hall.

Bährmann / Müller: Bestimmung wirbelloser Tiere.

Sinclair, A., R.E., Fryxell, J., M., Caughley, G. 2006. Wildlife Ecology, Conservation and Management. Blackwell Verlag.

Aktuelle Literatur wird – angepasst an die jeweiligen Praxisbeispiele – vor Beginn des Moduls bekanntgegeben.

E Exercises in wildlife biology and mangement II***

Semester:	2
Module coordinator	Prof. Dr. Siegfried Rieger (siegfried.rieger@hnee.de)
Status:	Elective module
Goal:	The students are enabled to understand and put into practice fundamentals of wildlife biology and hunting, with special consideration of the ecosystem approach.
Examination form:	Work report (50 %), Project presentation (50%)
ECTS-Credits:	6
SWH:	5

Module component 1	**Wildlife biology**
Semester:	2
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger et al.
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	20 (+ 20 Fowis)
Teaching form:	Seminar (30 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Project presentation (50 %)
Entry requirements:	-

Goal:	Students have an overview of the biology and ecology of wildlife with emphasis on mammals and birds. Another focus is the lifestyle of native wildlife.
Content:	Contents of this module are biology and ecology of selected species of wild animals. Students choose a species or species group from a predefined list. After extensive study of literature about the selected species, students are requested to hold a presentation on biology, ecology, current issues and management strategies. The preparation takes place in small groups and the presentation to the entire group.
Recommended related elective modules:	
Competences:	Technical competence (40%) Media competence (20%) Methodological competence (20%) Social competence (10%) Personnel competence (10%)
Literature:	Literature research is an important component of the project presentation.

Module component 2	Exercises in wildlife management

Semester:	2
Coordinator:	Prof. Dr. Lubomir Blasko
Lecturer:	Prof. Dr. Lubomir Blasko
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	10 (+ 10 Fowis)
Teaching form:	Seminar (15 h), Practical exercise (30 h), Self-study (30 h)
Language:	German
Module type:	blocked
Examination form:	Work report (50 %)
Entry requirements:	-
Goal:	Students can identify a range of regionally occurring species. They are familiar with the species' biological characteristics and protection status. Students have working knowledge of current recording methods. Students can identify problem areas of wildlife management, analyze the arguments of representatives of various stakeholders and develop solutions. They possess skills to collaborate in the development of wildlife management plans.

Content:

Based on the module "Fundamentals of wildlife biology and zoology", here the knowledge of the regionally occurring species is taught and the fundamentals of wildlife management in Slovakia are deepened. Particular emphasis is on groups of vertebrates (e.g. amphibians, reptiles, birds) and invertebrates (ground dwelling arthropods, aquatic organisms). The module focuses on the identification of species (identification exercises, seminars), but also covers common recording methods exercised in practice (including limnological methods). In addition, knowledge of the organism´s biology, ecological requirements and their protectionis covered in the context of lectures, exercises and seminars. In addition, building on the theoretical fundamentals mediated in the sub-module "forest ecology and wildlife management", current examples of wildlife management are presented. Locally in various natural areas, the problem areas are identified, areas of conflict are analyzed and solutions are presented. In addition, different management strategies are presented

Recommended related elective modules:

Competences:

Technical competence (40%) Media competence (5%) Methodological competence (5%) Social competence (15%) Personnel competence (5%)

Literature:

Anderson, S., H. 1991. Managing our Wildlife Resources. Prentice Hall.

Bährmann / Müller: Bestimmung wirbelloser Tiere.

Sinclair, A., R.E., Fryxell, J., M., Caughley, G. 2006. Wildlife Ecology, Conservation and Management. Blackwell Verlag.

Current literature – adapted to the respective case studies - will be announced at the beginning of the module.

M   Environmental policy and economics

Semester:	3
Module coordinator	Prof. Dr. Klaus Günther-Dieng (klaus.guenther-dieng@hnee.de)
Status:	Mandatory module
Goal:	Students know of the basic elements of the two sectoral policy fields concerning Development and Environment and the essential legal documents and common methods in environmental evaluation and decision-making, e.g. cost-benefit analysis. They are able to take actively part in public discussions and write statements and other contributions e.g. for organization which are engaged in this field. They can develop arguments and are trained in dispute participation and moderation.
Examination form:	Technical discussion 20 min (100%)
ECTS-Credits:	6
SWH:	5

Module component 1   Environmental economics

Semester:	3
Coordinator:	Prof. Dr. Carsten Mann
Lecturer:	Prof. Dr. Carsten Mann et al.
ECTS-Credits:	2
SWH:	1
Workload:	50 h / Semester
Max. study places: **Teaching form:**	Lecture (10 h), Practical exercise (5 h), Self-study (35 h)
Language:	English

Module type:	continuous
Examination form:	Technical discussion (30%)
Entry requirements:	-
Goal:	Students know the fundamentals of environmental economics and are enabled to classify and communicate environmental-economic issues.
Content:	Students receive theoretical knowledge of environmental and resource economics. They are able to identify correlations between natural and economic systems, understand the dynamics of market systems, know the reasons for market failures and their political and economic solutions. Opportunities and limitations of new markets and economic instruments as well as the concept of ecosystem services and value added approaches are discussed and critically reflected.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (30%) Social competence (20%)
Literature:	Boulding, K 1966, The Economics of the coming Spaceship Earth, in H. Jarrett, Ed. 166 Environmental Quality in a Growing Economy: 3-14.

Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R.G., Sutton, P., van den Belt, M. 1997. The value of the world's ecosystem services and natural capital. Nature 387: 253–260.

Daly, H.E., Farley, J., 2011. Ecological Economics: Principles and Applications, 2nd ed. Island Press, Washington, DC. Chapter 10: Market Failures (pp. 165-191).

Engel, S., Pagiola, S., Wunder, S. 2008. Designing payments for environmental services in theory and practice: an overview of the issues. Ecological Economics 65(4):663–674.

Jacob and Edenhofer (2015): Welfare with or without Growth? Gaia 24(4), 240-242.

Loske (2015): Why the Post-Growth Debate Is Not a Wrong Turn. Gaia 24(4):236-239.

Seidl and Zahrnt (2015): Social Welfare Politics Cannot Ignore Growthmania. Gaia 24(4): 232-235.

Spash, C.L., 2011. Social ecological economics: Understanding the past to see the future. The American Journal of Economics and Sociology. 70 (2), 340-375.

Vatn, A., 2014. Markets in environmental governance — From theory to practice. Ecological Economics 105: 97–105.

Wunder, S. 2015. Revisiting the concept of payments for environmental services. Ecological Economics doi:10.1016/j.ecolecon.2014.08.016

Module component 2	**Environmental development policy and law**

Semester:	3
Coordinator:	Prof. Dr. Klaus Günther-Dieng, NN
Lecturer:	Prof. Dr. Klaus Günther-Dieng
ECTS-Credits:	4
SWH:	3
Workload:	100 h / Semester
Max. study places:	
Teaching form:	Lecture (30h), Practical exercise (15 h), Self-study (30 h)
Language:	English
Module type:	continuous
Examination form:	Technical discussion (70%)
Entry requirements:	-
Goal:	The students know the basic elements of the two sectoral political fields with regard to environment and development, taking into account postcolonial history. They are able to actively participate in public debates and write statements and other contributions, e.g. for organisation working in this field. They are able to develop arguments and are trained in participating in and moderating conflicts.
Content:	Starting with the differences between developed and developing countries and the common indicators the most important principles, strategies and means of international cooperation and assistance will be explained and discussed. The explanations will be illustrated by current case studies. As an important part of international policy the globalized trade system will be discussed by introducing basic regulations, such as GATT, GATS and TRIPS. Also, the main actors and their tasks will be introduced divided in Governmental and Non-governmental Institutions. Finally, funding sources and regulations, furthermore conflicts and conflict management in natural resources will be discussed. As a specific field of action international forest policy will be discussed. Students are encouraged to work out "work-sheets" for their critical self-assessment.
Recommended related elective modules:	Certification and impact assessment
Competences:	Technical competence (50%) Methodological competence (10%) Social competence (40%)
Literature:	Einschlägige internationale Konventionen und Vereinbarungen
	Mc Cormick: Environmental Politics and Policy, 2018

FAO: State of the World Forests.

Kruck, A.; Rittberger, V.; Zangl, B, Internationale Organisationen, 4. Aufl. 2012

UNEP, Yearly reports

Vranes E., Trade and the Environment, 2009

Wilhelm & Ihne, Einführung in die Entwicklungspolitik, 3. Aufl. 2013

Wold, Ch.; Gaines, S.; Block,G. (2005): Trade and the Environment, Carolina acad. Press.

OECD/WTO: Aid for Trade 2019

EU Biodiversity Strategy for 2030

M   Forest ecology and mensuration

Semester:	3
Module coordinator:	Prof. Dr. Andreas Linde (andreas.linde@hnee.de)
Status:	Mandatory module
Goal:	The students are enabled to analyse forest ecosystems (fauna and flora) as a basis for silviculture.
Examination form:	Project report (33%), Written exam 90 min (33%), Project presentation (33%)
ECTS-Credits:	6
SWH:	5

Module component 1   Applied ecology

Semester:	3
Coordinator:	Prof. Dr. Andreas Linde
Lecturer:	Prof. Dr. Andreas Linde
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places: **Teaching form:**	Lecture (10 h), Practical exercise (10 h), Project (10 h), Self-study (20 h)
Language:	English
Module type:	Partly-blocked
Examination form:	Project report (33 %)
Entry requirements:	-
Goal:	Students continue to investigate and analyse all elements of a (forest-)ecosytem: Site conditions, plant community, stand structure, climate data, and animal community. They gain methodological knowledge, understand complex

Content:	interactions and interpret results of scientific studies with regard to the effects of forest management on the multifunctionality of forest ecosystems. In a block week, students continue practical work on the experimental plots (started in module „Ökologie und Wildtiermanagement", 2nd semester). They use different ecological methods to investigate a specific forest stand. Students understand the concept of vegetation science and the concept of organisms (e.g. insect and plant species) as indicators for the status of an ecosystem. Work in the field and laboratory is performed in a team to practise the organization and execution of scientific field work. All used methods and results are described and discussed in a written report.
	Furthermore, in several lectures, we investigate the inter- and intraspecific relations of organisms as an example for complex interactions in ecosystems. Factors regulating population density are investigated from an applied point of view (e.g. biological forest protection). Potential threats for the functionality of ecosystems (e.g. climate change, intensive landuse, invasive species etc.) and mitigation options are discussed.
Recommended related elective modules:	
Competences:	Technical competence (35%) Methodological competence (35%) Social competence (25%) Personnel competence (5%)
Literature:	Begon, Townsend: Ecology (John Wiley & Sons 2020). Singer: Ecology in action (Cambridge Univ. Press, 2016) Henderson, Southwood: Ecological Methods (Wiley-Blackwell 2016).

Module component 2 — Fundamentals of silviculture

Semester:	3
Coordinator:	Prof. Dr. Jens Schröder
Lecturer:	Prof. Dr. Jens Schröder
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	
Teaching form:	Lecture (30h), Self-study (20 h)
Language:	English
Module type:	continuous
Examination form:	Written exam 90 min (33%)
Entry requirements:	-

Goal:	Students obtain a detailed understanding about relationships within forest ecosystems and between these ecosystems and their environment under the influence of different management strategies. They are able to transform the information they gathered from basic forestry and ecological subjects into hands-on, in-depth knowledge on the fundamentals of how to develop and sustainably manage multi-purpose forest ecosystems under a variety of societal, economic, and ecological constraints.
Content:	The course builds on the abilities and knowledge obtained in the basic disciplines such as soil science, vegetation geography, and ecology. They are used and significantly enhanced to develop a thorough understanding of the complex relationships between the elements of forest ecosystems and between these systems and their larger environment. Initially, site factors and their interactions are discussed focusing on their effects on tree and forest productivity, vitality, and resilience. Concepts of disturbances, stress, and complex diseases are discussed, leading to a detailed section on climate change and its effects on forest ecosystems in Central Europe and worldwide. Special emphasis is placed on the nature and effects of biotic interactions such as competition and facilitation and on their consequences for managing and safeguarding structurally rich, mixed-species forests. We will touch examples and strategies from many different geographic regions, from Asia, Africa, and the Americas to particular problems of domestic forestry. The concluding lecture will discuss and summarize the effects of forest management on the ecosystems and their multi-facetted services for human societies.
Recommended related elective modules:	
Competences:	Technical competence (70%) Methodological competence (30%)
Literature:	Barnes, B. V.; Zak, D. R.; Denton, S. R.; Spurr, S. H. 1998: Forest ecology. 4. Aufl., Wiley, New York
	Bartsch, N.; Röhrig, E. 2016: Waldökologie. Einführung für Mitteleuropa. Springer Spektrum, ISBN 978-3-662-44267-8
	Ghazoul, J.; Sheil, D. 2017: Tropical Rain Forest Ecology, Diversity, and Conservation. Oxford University Press, New York, USA.
	Günther, S. et al. 2011: Silviculture in the Tropics. Springer
	Kimmins, J. P. 2004: Forest Ecology. Third ed.; Benjamin Cummins
	Lamprecht, H. 1994: Silviculture in the tropics. GTZ/Parey
	Otto, H.-J. 1994: Waldökologie. Stuttgart: Ulmer (UTB für Wissenschaft)

Module component 3	**Forest mensuration**
Semester:	3
Coordinator:	Prof. Dr. Barbara Wolff
Lecturer:	Prof. Dr. Barbara Wolff

ECTS-Credits:	2
SWH:	1
Workload:	50 h / Semester
Max. study places:	
Teaching form:	Lecture (10 h), Practical exercise (5 h), Self-study (35 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (33%)
Entry requirements:	-
Goal:	The students have the ability to methodically prepare and carry out basic forest taxations with different objectives and to analyze and interpret the collected data.
Content:	- measurement of single trees and stand - forest yield assessment with yield tables - area/mass/increment calculation - methods of stand inventory - area calculations - target-orientated conception of complex forest mensuration.
Recommended related elective modules:	
Competences:	Technical competence (60%) Methodological competence (30%) Personnel competence (10%)
Literature:	Avery, T. E. & Burkhart, H. 1994. Forest Measurements. 4th edition. McGraw-Hill. 408p.
	Gärtner, M. & Hagebusch, A. 1998. Fachkunde für Vermessungtechniker. 9. Auflage, Rheinland-Verlag, Pulheim, 351 S.
	Hake, G., Grünreich, D. & Meng, L. 2002. Kartografie (8. Auflage). De Gruyter Lehrbuch. 8. Auflage 603 S.
	Kramer, H. & Akca, A. 1995. Leitfaden zur Waldmesslehre; 3. Auflage. J.D.Sauerländer's Verlag, Frankfurt/M. 266S.
	VAn Laar, A. & Akca, A. 1997. Forest Mensuration, Cuvillier Verlag, Göttingen. 418 S.
	Werner, H., Kurth, H. et al. 1991. Forstvermessung und -Karten. Verl. F. Bauwesen. 148 S.
	Further, current literature will be given in the context of the lecture.

M Adaptive ecosystem management

Semester:	3
Module coordinator	Prof. Dr. Pierre Ibisch (pierre.ibisch@hnee.de)
Status:	Mandatory module
Goal:	Based on the principles and instruments of adaptive management as well as ecosystem based strategies, the students will gain the knowledge to propose ecosystem-based strategies for selected areas.
Examination form:	Project report (100 %)
ECTS-Credits:	6
SWH:	4

Module component 1 — Adaptive ecosystem mangament

Semester:	3
Coordinator:	Prof. Dr. Pierre Ibisch
Lecturer:	Prof. Dr. Pierre Ibisch, Dr. Stefan Kreft, et al.
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places: **Teaching form:**	Lecture (20 h), Practical exercise (40 h), Self-study (90 h)
Language:	English
Module type:	blocked
Examination form:	Project report (100 %)
Entry requirements:	-
Goal:	Based on the principles and instruments of adaptive management as well as ecosystem-based strategies, the students will be enabled to propose ecosystem-based strategies for sustainable development in selected areas.

Content:
The students will work in groups and establish a simplified management plan for a given area on the basis of a methodological approach developed by the Conservation Measures Partnership (CMP): Open Standards for the Practice of Conservation. CMP is a group of several conservation NGO (e.g. the Nature Conservancy, WWF, Conservation International). This planning method represents a step-by-step approach in order to seize and evaluate relevant management challenges in a systemic manner and to derive the corresponding strategies. In this course the method will be presented on the basis of an overview of adaptive management and ecosystem-based sustainable development. The course is taught in a combination of lectures and ongoing tutorials. The practical exercises will be carried out in small groups of 3-5 students. Thereby the software Miradi will be applied/used.

Recommended related elective modules:

Competences:
Technical competence (30%) Methodological competence (30%) Media competenc e (10%) Social competence (20%) Personnel competence (10%)

Literature:
CMP (2014): Improving How Conservation Impact Is Measured. (online: http://www.conservationmeasures.org/).
Conservation Measures Partnership & BENETECH (2014) Miradi. Adaptive management software for conservation projects. https://miradi.org/
Margoluis, R. & N. Salafsky. 1998. Measures of success: Designing, managing, and monitoring conservation and development projects. Washington D.C.: Island Press.
Salafsky, N., R. Margoluis & K. Redford (2001) Adaptive Management: A tool for conservation practitioners. Biodiversity Support Program (BSP), WWF.
http://www.fosonline.org/resources/Publications/AdapManHTML/Adman_1.html
Website der IUCN zu Schutzgebieten:
http://www.iucn.org/about/work/programmes/gpap_home/
Weitere Literatur wird im Rahmen der Veranstaltung genannt bzw. zur Verfügung gestellt

M — Applied silviculture, ecosystem restoration and forest inventory

Semester:	3
Module coordinator:	Prof. Dr. Peter Spathelf (peter.spathelf@hnee.de)
Status:	Mandatory module
Goal:	The students are qualified to develop forest management strategies, to evaluate them economically and to put them into practice. They have basic knowledge about the development of forests after calamities and under conditions of climate change. The students master basic methods and techniques of forest inventory for different objectives and conditions.
Examination form:	Project report (70 %), Written exam 90 min (30%)
ECTS-Credits:	6
SWH:	5

Module component 1 — Applied silviculture and ecosystem development and restoration

Semester:	3
Coordinator:	Prof. Dr. Peter Spathelf
Lecturer:	Prof. Dr. Peter Spathelf
ECTS-Credits:	4
SWH:	3
Workload:	100 h / Semester
Max. study places:	20
Teaching form:	Lecture (25 h), Practical exercise (20 h), Self-study (55 h)
Language:	English
Module type:	blocked
Examination form:	Project report (70 %)
Entry requirements:	-

Goal:	Students are enabled to develop, evaluate and put into practice forest management strategies and treatment programs based on socio-economic information and knowledge of forest ecology, forest growth theory, site assessment and silviculture. Specific silvicultural techniques are known and can be applied to concrete situations in forest stands (both tropical/subtropical and temperate zones) according to the given objectives of the forest operator/owner.
	Students learn about the possibilities and limits of promoting forest development after calamities and under conditions of climate change. They are able to critically reflect on corresponding heuristics for the promotion of ecosystem functionality.
Content:	On the subject of ‚silviculture' specific tools of applied silviculture such as techniques of artificial and natural regeneration, tending of young stands and thinning, pruning, silvicultural systems, strategies to produce high valued timber are discussed and evaluated. Moreover, silvicultural techniques are applied in practical exercises. Additionally, emphasis is laid on programmes of close-to-nature silviculture, forest conversion and adaptation of forestry/silviculture to climate change as well as the maintenance of biodiversity in managed forests. In international forestry selected topics of plantation forestry and natural forest management are provided.
	Based on the observation of different forest ecosystems including (former) calamity areas as well as on the study of international literature, students deal with scenarios of forest development after disturbances or calamities. The experiences as well as the potential advantages and disadvantages of different treatment approaches will be analyzed in detail (e.g. area preparation depending on the initial situation, natural regeneration and development, planting, sowing). Special emphasis is placed on climate-change-induced risks. The students deal with concepts of ecosystem functionality and with heuristics for their promotion and the reduction of risks as well as with their classification in a nature conservation context.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (25%),Social competence (25%)
Literature:	FAO (2015): State of the world's forests. FAO, Rome. www.fao.org
	Fritz, P. (Hrsg.) 2006. Ökologischer Waldumbau in Deutschland. Fragen, Antworten, Perspektiven. Oekom-Verlag. 351 S.
	Günter, S., Weber, M., Stimm, B., Mosandl, R. (Eds.) (2011): Silviculture in the Tropics. Series: Tropical Forestry, Vol. 8. Springer, 560 p.
	Nambiar, E.K.S. 1999. Pursuit of Sustainable Plantation Forestry. Southern African Forestry Journal, No 184. p. 45-62.
	Pearce, D., Putz, F.E. & Vanclay, J.K. (003. Sustainable forestry in the tropics: panacea or folly? Forest Ecology and Management 172 / 2-3. S. 229-247.
	Prabhu, B.R., Weidelt, H.-J. & Leinert, S. 1993. Erfahrungen und Möglichkeiten einer nachhaltigen Bewirtschaftung von artenreichen tropischen Regenwäldern. Weltforum Verlag, München, Köln, London. Band 109. 292 S.
	Röhrig, E., Bartsch, N. & Von Lüpke, B. 2006. Waldbau auf ökologischer Grundlage. 7. Auflage. Verlag Eugen Ulmer Stuttgart. 479. S.

Smith, D.M. 1962. The practice of silviculture. John Wiley & Sons, New York. 578 p.

Spathelf, P., Schneider, P.R., Finger, C.A., 2001. Zur nachhaltigen Bewirtschaftung von Araukarien-Mischwäldern in Südbrasilien. Forstarchiv 72, 92-100.

George D. Gann et al. 2019. International principles and standards for the practice of ecological restoration. Second edition. Society for Ecological Restoration. Restoration Ecology published by Wiley Periodicals, Inc. on behalf of Society for Ecological Restoration (https://onlinelibrary.wiley.com/doi/10.1111/rec.13035).

Further bibliography to be provided.

Module component 2	Forest inventory
Semester:	3
Coordinator:	Prof. Dr. Barbara Wolff
Lecturer:	Prof. Dr. Barbara Wolff
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	20
Teaching form:	Lecture (20 h), Practical exercise (10 h), Self-study (20 h)
Language:	German/ English
Module type:	continuous
Examination form:	Written exam 90 min (30%)
Entry requirements:	
Goal:	Students are familiar with basic methods and techniques of forest inventory and forest management. They know inventories of different objectives on different spatial scales. They are able to design, apply and evaluate classical forest and forest ecological inventories for different objectives. They know internationally suitable forest management procedures.
Content:	• fundamantal statistics for forest inventories
	• sampling units
	• sampling design (e.g. simple random sampling, systematic sampling, stratified sampling)
	• forest inventory planning
	• typical forest inventory systems (e.g. national forest inventory, forest enterprise inventories, special surveys)

- International Forest Management Procedures

Recommended related elective modules:

Competences: Technical competences (60%) Methodological competences (40%)

Literature: Akca, A. 2001: Waldinventur. J.D. Sauerländer's Verlag, Frankfurt am Main, 193 S.

Zöhrer, F. 1980: Forstinventur. Pareys Studientexte 26; 207 S.

Further, current literature will be given in the course of the event.

E Phytopathology and environmental monitoring

Semester:	3 und 4
Module coordinator	Prof. Dr. Harald Schill (harald.schill@hnee.de)
Status:	Elective module
Goal:	The students are able to identify biotically and abiotically caused plant diseases on woody plants and to apply procedures of environmental monitoring in the forest.
Examination form:	Written exam 90 min (50%) and Written exam 90 min (50%)
ECTS-Credits:	6
SWH:	6

Module component 1	Fundamentals of phytopathology and environmental monitoring
Semester:	3
Coordinator:	Prof. Dr. Harald Schill
Lecturer:	Prof. Dr. Harald Schill, Prof. Dr. Barbara Wolff
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	25
Teaching form:	Lecture (30 h), Practical exercise/ Seminar (15 h), Self-study (30 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (50%)
Entry requirements:	-

Goal:	Students are enabled to identify fundamental biotic and abiotic cause-and-effectrelations in plant diseases and to apply methods of environmental monitoring.
Content:	Abiotic causes of disease, especially weather/climate, immissions; biotic pathogens: viroids, viruses, bacteria, with emphasis on fungi; host-host interactions: parasite; infection mechanisms, defense mechanisms, infection chains, CODIT model; Inventory procedures/methods for the detection of forest damage.
Recommended related elective modules:	Angewandte Gehölzpathologie
Competences:	Technical competence (80%) Methodological competence (20%)
Literature:	Butin, H. (2011): Krankheiten der Wald- und Parkbäume. Ulmer Verlag. Agrios, G.N. (2005): Plant Pathology. Elsevier Academic Press ICP-Forsts.net (Bodies and structure/ Publications / Manual) https://www.bmel.de/DE/themen/wald/wald-in-deutschland/forstliches-umweltmonitoring.html. Zum download

    a) Forstliches Umweltmonitoring (pdf-Broschüre)
    b) Waldbericht(e) der Bundesregierung
    c) Ergebnisse der Waldzustandserhebungen
    d) Ergebnisse der Bodenzustandserhebungen

Ministerium für Ländliche Entwicklung, Umwelt und Landwirtschaft Hrsg. (2106): 30 Jahre forstliches Umweltmonitoring in Brandenburg. Eberswalder Forstliche Schriftenreihe Band 63. Aus unter: https://forst.brandenburg.de/sixcms/media.php/9/efs63.pdf.

Module component 2	**Applied woody plant pathology**
Semester:	4
Coordinator:	Prof. Dr. habil. Jörg Schumacher
Lecturer:	Prof. Dr. habil. Jörg Schumacher
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	25
Teaching form:	Lecture (30 h), Practical exercise (15 h), Self-study (30 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (50%)

Entry requirements: -

Goal: The students are enabled to know important pathogens (fungi, bacteria, viruses/viroids) on woody plants (especially forest trees), to diagnose infestation symptoms of the pests, to assess their ecological and economic importance and, if necessary, to carry out prevention and containment measures appropriately.

Content: The courses cover important woody plant diseases, including the characteristics and methods important for diagnosis or symptom analysis. The pathogens and their pathogenesis of common or relevant diseases on flowers, seeds and seedlings, leaves, needles, buds and shoots, in the bark as well as in the wood are presented and evaluated. As far as proven and recognized possibilities for the prevention and containment of caused damages exist, these are also presented. In addition to teaching knowledge in the lectures, there will be supplementary excursions and microscopic exercises on selected examples.

Recommended related elective modules: Schadensdiagnostik der Gehölze, Neobiota und Komplexkrankheiten

Competences: Technical competence (70%) Methodological competence (30%)

Literature: Butin, H. 2011: Krankheiten der Wald- und Parkbäume. Diagnose - Biologie - Bekämpfung. 4. Aufl., Stuttgart, New York: Ulmer Verlag

Butin, H., Brand, T. 2017: Farbatlas Gehölzkrankheiten. 5. erw. Auflage, Eugen Ulmer

Hartmann, G., Butin, H., 2017: Farbatlas Waldschäden. 4. aktual. Aufl. Eugen Ulmer.

E Forest pedagogics and public relations

Semester:	3 und 4
Module coordinator	Dr. Astrid Schilling (astrid.schilling@hnee.de)
Status:	Elective module
Goal:	The students are enabled to become multipliers for nature- and environment-friendly actions and acquire tools for dealing with the media and the general public. Students will be able to identify and involve various forest-relevant stakeholders and their interests, and to use appropriate conflict resolution strategies.
Examination form:	Term paper (30%), Project presentation the form of a guided forest tour (70%)
ECTS-Credits:	6
SWH:	5

Module component 1 — Public relations

Semester:	3
Coordinator:	Dr. Astrid Schilling
Lecturer:	Dr. Astrid Schilling
ECTS-Credits:	2
SWH:	2
Workload:	50 h / Semester
Max. study places:	-
Teaching form:	Lecture (15 h), Seminar und Practical exercise (15 h), Self-study (20 h)
Language:	German
Module type:	continuous
Examination form:	Term paper (30%)
Entry requirements:	-

Goal:	Students gain applicable practical tools in dealing with the media (press, television, radio) and print media (printers, publishers) as well as representatives of public relations (press spokespersons). They are enabled to organize, communicate and write creatively and in a way that is appropriate to the target group, integrating their emotional intelligence (e.g. creative writing).
Content:	Theoretical basics of public relations (PR) are taught, with a focus on PR and crisis PR for the environmental and forestry sector. Actors of PR, dealing with media and media representatives, forms of media relations as well as PR communication are contents of the course. Insights into the external perception of forestry work yesterday and today are intended to raise awareness of public relations in the forestry sector and to take account of the new job profile. As preparation for the homework (writing a press text for a specific target group (readership) or the development of a flyer), theoretical as well as directly applicable knowledge about press texts, creative writing, mind mapping, print products, design elements and the layout will be imparted.
Recommended related elective modules:	
Competences:	Technical competence (20%) Media competence (30%) Methodological competence (30%) Social competence (10%) Personnel competence (10%)
Literature:	Böhringer, Joachim; Bühler, Peter; Schlaich, Patrick und Dominik Sinner (2014): Kompendium der Mediengestaltung. I. Konzeption und Gestaltung. - Springer Vieweg; 6. Aufl.
	Dobler, Günter; Suda, Michael und Gerhard Seidl (2016): Wortwechsel im Blätterwald: Erzählstrukturen für eine wirksame Öffentlichkeitsarbeit. - Books on Demand; 1. Aufl.
	Franck, Norbert (2001): Klartext schreiben: mehr Erfolg im Beruf; Berichte, Protokolle, Pressemeldungen. Regensburg, Düsseldorf, Berlin;
	Franck, Norbert (2017): Praxiswissen Presse- und Öffentlichkeitsarbeit. Ein Leitfaden für Verbände, Vereine und Institutionen. -VS Verlag für Sozialwissenschaften; 3. Aufl.
	Hehn, M.; Katz, Ch.; Mayer, M. und T. Westermayer (2010): Abschied vom grünen Rock: Forstverwaltungen, waldbezogene Umweltbildung und Geschlechterverhältnisse im Wandel.- oekom verlag; 1. Aufl.
	Holzbaur, Ulrich (2015): Events nachhaltig gestalten: Grundlagen und Leitfaden für die Konzeption und Umsetzung von Nachhaltigen Events.- Springer Gabler.
	von Werder, Lutz (2016): Lehrbuch des Kreativen Schreibens.- Marixverlag; 2. Aufl.

Module component 2	**Forest pedagogics and education for sustainable development**
Semester:	4
Coordinator:	Dr. Astrid Schilling
Lecturer:	Dr. Astrid Schilling

ECTS-Credits:	4
SWH:	3
Workload:	100 h / Semester
Max. study places:	-
Teaching form:	Lecture (22 h), Seminar und Practical exercise (23 h), Self-study (55 h)
Language:	German
Module type:	continuous
Examination form:	Project presentation the form of a guided forest tour (70%)
Entry requirements:	
Goal:	The students should be sensitized for the topic of environmental education (in particular for forest education) in the sense of sustainability and become multipliers for nature- and environment-friendly actions with distinct environmental competences. They will gain the ability to independently conduct a forest tour with a target group. The students should understand forest education not only as a service task, but also as creative public relations work for the forest and their future professional field.
Content:	Students experience forest education in the context of education for sustainable development as creative public relations for the forest and their future professional field.
	Information, methods and values are imparted to enable the acting and responsible person to deal with the consequences of his/her actions in the natural, the built and the social environment. Content also includes the history of environmental education and its global significance in the 21st century as a component of education for sustainable development. The students deal with the implementation of nature-based environmental education in a form appropriate to the age group or target group. For this purpose, didactic and methodological basics for planning and conducting a forest tour are taught. Practical exercises on the above-mentioned topics and guided tours with state-certified forest educators play a major role. Other important aspects are the target group oriented processing of scientific background knowledge, the integration of experiential and wilderness education, the experience of nature with all senses (flow learning according to CORNELL), the tree in mythology and as a symbol, forms of learning and action in environmental education, dealing with special target groups (e.g. people with disabilities) as well as institutions and organizations of forest education and environmental education in Germany.
Recommended related elective modules:	
Competences:	Technical competence (40%) Methodological competence (30%), Social competence (20%), Personnel competence (10%)

Literature:

Bolay, Eberhard u. Berthold Reichle (2016): Handbuch der waldbezogenen Umweltbildung. Waldpädagogik 1: Theorie. -Schneider Verlag GmbH; 4. Aufl. (vollständig überarbeitete und erweitert).

Bolay, Eberhard u. Berthold Reichle (2011): Handbuch der waldbezogenen Umweltbildung. Waldpädagogik 2: Praxiskonzepte. -Schneider Verlag Hohengehren; 1. Aufl.

Brämer, Rainer (2006): Natur obskur: Wie Jugendliche heute Natur erfahren. – Oekom Verlag, 1. Aufl.

Cornell, Joseph (2017): Cornells Naturerfahrungsspiele für Kinder und Jugendliche: Die besten Klassiker und neue Spiele. - Verlag an der Ruhr, 1. Aufl.

Forstliche Bildungsarbeit (2017): Waldpädagogischer Leitfaden - nicht nur für Förster.- Bayerisches Staatsministerium für Ernährung, Landwirtschaft u. Forsten; 8. überarbeitete und erweiterte Aufl.; Loseblattordner.

Jung, Norbert; Molitor, Heike; Schilling, Astrid (Hg.) (2012): Auf dem Weg zu gutem Leben. Die Bedeutung der Natur für seelische Gesundheit und Werteentwicklung. Opladen, Berlin, Toronto: Budrich UniPress Ltd (Eberswalder Beiträge zu Bildung und Nachhaltigkeit, Band 2).

Jung, Norbert; Molitor, Heike; Schilling, Astrid (Hg.) (2015): Natur, Emotion, Bildung - vergessene Leidenschaft? Zum Spannungsfeld von Naturschutz und Umweltbildung. Opladen, Berlin, Toronto: Budrich UniPress Ltd (Eberswalder Beiträge zu Bildung und Nachhaltigkeit, Band 4).

Jung, Norbert; Molitor, Heike; Schilling, Astrid (Hg.) (2014): Vom Sinn der Heimat. Bindung, Wandel, Verlust, Gestaltung – Hintergründe für die Bildungsarbeit. Opladen, Berlin, Toronto: Budrich UniPress Ltd (Eberswalder Beiträge zu Bildung und Nachhaltigkeit, Band 3).

Jung, Norbert; Molitor, Heike; Schilling, Astrid (Hg.) (2018): Was Menschen bildet. Bildungskritische Orientierungen für gutes Leben. Opladen, Berlin, Toronto: Budrich UniPress Ltd (Eberswalder Beiträge zu Bildung und Nachhaltigkeit).

Laudert, Doris (2009): Mythos Baum. Geschichte - Brauchtum - 40 Baumporträts.- BLV Buchverlag; 7. Aufl.

Lohri, Franz und Astrid Schwyter Hofmann (2004): Treffpunkt Wald. Waldpädagogik für Forstleute.-Rex Verlag; 2. Aufl.

Neumann, Antje u. Burkhard Neumann (2019): Waldfühlungen: Das ganze Jahr lang den Wald erleben. Naturführungen, Aktivitäten und Geschichtenfibel. Mit Spielen, Übungen und Rezepten.-Ökotopia Verlag; 14. Aufl.

Tubes, Gisela (2016): Spiele im Wald: 100 abwechslungsreiche Erlebnis- und Bewegungsideen für Grund- und Vorschulkinder.-Quelle & Meyer (Verlag); 2. Aufl.

E   Hunting management

Semester:	3 and 4
Module coordinator	Prof. Dr. Siegfried Rieger (siegfried.rieger@hnee.)
Status:	Elective module
Goal:	Students will be able to understand wildlife biology and hunting principles in an ecosystem context and apply them practically where appropriate.
Examination form:	Project report (50%) and Project report (50%)
ECTS-Credits:	6
SWH:	4

Module component 1   Modern hunting strategies

Semester:	3
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	10 (+ 10 IFEMs)
Teaching form:	Lecture (10 h), Practical exercise (10 h), Seminar (10h), Self-study (45 h)
Language:	German
Module type:	partly-blocked
Examination form:	Project report (50%)
Entry requirements:	Shooting license
Goal:	Students are enabled to organize hunting operations for public or private forestry owners according to modern, ecological principles. They are also able to independently plan, organize and conduct greater movement hunts.

Content:	This subject introduces modern, ecosystem-oriented hunting strategies. After the theoretical basics have been taught, the practical knowledge of accident prevention regulations, hunting logistics and game hygiene is to be deepened through the independent and autonomous planning and execution of a movement hunt. Through the subsequent evaluation in the form of a project report, the success of the planned and executed procedures will be verified.
Recommended related elective modules:	
Competences:	Technicael competence (50%) Methodological competence (50%)
Literature:	Eisenbarth, Eberhard und Ophoven Ekkehard (2002): Bewegungsjagd auf Schalenwild; Kosmos Verlag
	Hespeler, Bruno (2000): Jagd 2000 plus; nimrod Verlag
	Kujaweski, Olgierd (2007): Wildbrethygiene
	Wölfel, Helmuth (Hg.) (2003): Bewegungsjagden; Leopold Stocker Verlag
	Wölfel, Helmuth (1999): Turbo-Reh und Öko-Hirsch. Leopold Stocker Verlag
	Aktuelle Gesetzestexte BJagdG und LJagdG

Module component 2 — Advanced hunting practice

Semester:	4
Coordinator:	Prof. Dr. Siegfried Rieger
Lecturer:	Prof. Dr. Siegfried Rieger
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	10 (+ 10 IFEMs)
Teaching form:	Seminar (15 h), Practical exercise (15 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Project report (50%)
Entry requirements:	Shooting license
Goal:	Students have sound hunting-theoretical and -practical skills and are enabled to hunt ecosystem adapted according to the technical requirements.
Content:	This subject introduces modern, ecosystem-oriented hunting strategies. In addition to the teaching of theoretical and practical hunting basics, the

practical knowledge of hunting practice, accident prevention regulations, hunting logistics and game hygiene is to be deepened through independent and responsible hunting practice in individual and group hunts. This also takes place through practical hunting in the training hunting grounds of the HNEE. The subsequent evaluation in the form of a project report verifies the success of the planned and implemented procedures.

Recommended related elective modules:

Competences: Technical competence (60%) Methodological competence (20%), Social competence (20%)

Literature: Hespeler, Bruno (2000): Jagd 2000 plus; nimrod Verlag

Hespeler, Bruno (2015): Hege und Jagd im Jahreslauf: Revierpraxis von Januar bis Dezember

Hespeler, Bruno (2017): Rehjagern: Ein Praxisbuch

Happ, Norbert (2017): Hege und Bejagung des Schwarzwildes

Petrak, Michael (2019): Lebensraum Jagdrevier: Erkennen – erhalten – artgerecht gestalten

Kujaweski, Olgierd (2007): Wildbrethygiene

Wölfel, Helmuth (1999): Turbo-Reh und Öko-Hirsch. Leopold Stocker Verlag.

E   Damage diagnostics and tree care

Semester:	3
Module coordinator	Prof. Dr. Jörg Schumacher (jörg.schumacher@hnee.de)
Status:	Elective module
Goal:	The participants are enabled to recognize damages to trees and woody plants, to differentiate between the cause factors and to assess them fundamentally. They acquire the scientific and legal basics of the care and restoration of trees and their locations.
Examination form:	Written exam 120 min (100%)
ECTS-Credits:	6
SWH:	5

Module component 1   Tree care and assessment

Semester:	3
Coordinator:	Prof. Dr. Barbara Wolff
Lecturer:	Prof. Dr. Barbara Wolff, Prof. Dr. Jörg Schumacher, Prof. Dr. Klaus Günther-Dieng et al.
ECTS-Credits:	3
SWH:	2
Workload:	50 h / Semester
Max. study places:	25 (+ 25 Fowis)
Teaching form:	Lecture / Seminar(20 h), Practical exercise (10 h) Self-study (20 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (50%)
Entry requirements:	-
Goal:	The participants learn the basics for the care and restoration of trees in parks, urban areas and public forest sites. They know the essential legal framework for traffic safety as well as liability and compensation regulations. They are able to

determine tree values as well as to assess damage to trees in monetary terms. They are familiar with the methods and measures of "professional tree care", on the basis of which qualified recommendations can be made.

Content:

The sub-module is intended to provide an introduction to the complex subject area of tree care and tree assessment. In doing so, it partly builds on the basics of "damage diagnostics", whereby the contents taught there are directly used for tree assessment and the derivation of maintenance measures. The course contains a high seminar and exercise component. Practical examples in the field are used to demonstrate the respective methods and procedures and to discuss options for action. Theoretical basics alternate with practical field work and computer-aided evaluations. Numerous sources are made available for in-depth study.

Recommended related elective modules:

Phytopathologische Grundlagen und Umweltmonitoring, Angewandte Gehölzpathologie, Neobiota und Komplexkrankheiten

Competences:

Technical competence (60%), Methodological competence (40%)

Literature:

European Arboricultural Council 2011: European Treeworker. Patzer Verlag, Berlin/Hannover, ISBN 978-3-87617-121-0.
Hartmann, G., Butin, H., 2017: Farbatlas Waldschäden. 4. aktual. Aufl. Eugen Ulmer.
Jahrbuch der Baumpflege, jährlich seit 1997: Haymarked Media.
Klug, P. 2006: Praxis Baumpflege – Kronenschnitt an Bäumen. Arbus Verlag, Steinen 2006, ISBN 3-934947-11-5.
Kusche, D., Siewniak, M. 2009: Baumpflege Heute. Patzer Verlag, Berlin/Hannover, ISBN 978-3-87617-115-9.
Roloff. A. (2019): Baumpflege (3. Aufl.), Verlag Eugen Ulmer.
Shigo, A. 1994: Moderne Baumpflege. Grundlagen der Baumbiologie (Originaltitel: Modern Arboriculture). Übers.: Rolf Kehr, Heinz Butin. Thalacker, Braunschweig 1994, ISBN 3-87815-051-2.
von Malek, J., Molitor, W., Peßler, K. 1999: Der Baumpfleger. Ulmer (Eugen), ISBN 3-8001-5070-0.
Wessolly, L., Erb, M. 1998: Handbuch der Baumstatik und Baumkontrolle. Patzer Verlag, Berlin/Hannover, ISBN 3-87617-093-1.
ZTV-Baumpflege 2006: Zusätzliche Technische Vertragsbedingungen und Richtlinien für Baumpflege. Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau (FLL).
Dujesiefken, D., Jaskula, P., Kowol, T., Lichtenauer, A. (2018): Baumkontrolle unter Berücksichtigung der Baumart. Haymarket Media.
Gebhard, H. (2016): Verkehrssicherungspflicht der Waldbesitzer, 3. Auflage, ISBN/EAN: 978-3-8308-1253-1.
Koch, W. (Begr.), Hötzel, H. J., Hund, F. (Aktualisierte Gehölzwerttabellen
Schulz, H. J. (2004): Der Geldwert von Gehölzen als Grundstücksbestandteil und bei Unterschutzstellungen im Rahmen von Baumschutzsatzungen, Diss. Thesis, Hannover.

Module component 2	Damage diagnostics of the woody plants

Semester:

3

Coordinator:

Prof. Dr. Jörg Schumacher

Lecturer:	Prof. Dr. Jörg Schumacher, Prof. Dr. Barbara Wolff
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	25 (+ 25 Fowis)
Teaching form:	Practical exercise (22 h), Lecture/ Seminar (23 h), Self-study (30 h)
Language:	German
Module type:	continuous
Examination form:	Written exam (50%)
Entry requirements:	
Goal:	The participants are enabled to recognize damage to woody plants in forests, forest-like landscape structures and urban areas and to differentiate between them with regard to their cause factors. They are able to professionally apply and use recognized procedures and instruments of damage diagnostics, also with regard to the obligation to maintain safety on the roads.
Content:	The sub-module alternates between lectures/seminars and practical exercises/excursions. It is taught and practiced how damage to trees (individual trees and stands) is perceived and assessed on the basis of external characteristics. The symptoms of damage are considered according to the place of origin or incidence. Indifferent phenomena are also discussed. The diagnosis and differential diagnosis for the delimitation of the possible damage factors always takes place from the macro to the micro level. The currently applied methods and procedures are presented and tested.
Recommended related elective modules:	Phytopathologische Grundlagen und Umweltmonitoring, Angewandte Gehölzpathologie, Neobiota und Komplexkrankheiten
Competences:	Technical competence (60%), Methodological competence (40%)
Literature:	Butin, H., Brand, T. 2017: Farbatlas Gehölzkrankheiten. 5. erw. Auflage, Eugen Ulmer
	Hartmann, G., Butin, H., 2017: Farbatlas Waldschäden. 4. aktual. Aufl. Eugen Ulmer.
	Jahrbuch der Baumpflege (jährlich seit 1997): Haymarked Media.
	Roloff, A., 2001: Baumkronen. Verständnis, Zusammenhänge und Anwendung. Ulmer Verlag, Stuttgart.
	Roloff, A., 2004: Bäume – Phänomene der Anpassung und Optimierung. ECOMED. 276 S.
	Roloff, A. (2015): Handbuch der Baumdiagnostik, Baum-Körpersprache und Baum-Beurteilung. Verlag Eugen Ulmer.

Waldbäume – Bilderserien zur Einschätzung von Kronenverlichtungen bei Waldbäumen (2007). 2. überarbeitete Auflage, Arbeitsgemeinschaft Kronenzustand des Bundes und der Länder in Deutschland. Verlag M. Faste.

Waldzustandsberichte (jährlich herausgegeben) des Bundes und der Länder.

*weitere, gesondert zur Verfügung gestellte Literaturempfehlungen

E Microbiological laboratory exercises

Semester:	3
Module coordinator:	Prof. Dr. Jörg Schumacher (jörg.schumacher@hnee.de)
Status:	Elective module
Goal:	The participants are enabled to know the basic procedures of routine laboratory operation and to independently plan, conduct and evaluate scientific experiments with phyto- and entomopathogenic microorganisms.
Examination form:	Protocol (50%), Work report(25%), Project presentation (25 %)
ECTS-Credits:	6
SWH:	5

Module component 1	**Laboratory standards and experimental principles**
Semester:	3
Coordinator:	Prof. Dr. Jörg Schumacher
Lecturer:	Prof. Dr. Jörg Schumacher, Prof. Dr. Andreas Linde
ECTS-Credits:	3
SWH:	3
Workload:	75 h / Semester
Max. study places:	12
Teaching form:	Practical exercise (45 h), Self-study (30 h)
Language:	English
Module type:	Partly-blocked
Examination form:	Protocol (50%)
Entry requirements:	

Goal:	The participants know the specific safety standards and procedures of routine laboratory operation. They are familiar with the basic equipment of a microbiological laboratory and are capable of performing microbiological experiments on a scientific level.
Content:	The students are familiarized with the standards of laboratory operation. Following this, basic laboratory activities will be practiced and selected series of experiments with various phyto- and entomopathogenic microorganisms (bacteria, fungi, fungus-like microorganisms) will be set up and demonstrated together.
Recommended related elective modules:	Phytopathologische Grundlagen und Umweltmonitoring, Angewandte Gehölzpathologie
Competences:	Technical competence (60%) Methodological competence(40%)
Literature:	Bast, E. (2014): Mikrobiologische Methoden: Eine Einführung in grundlegende Arbeitstechniken. 3. Aufl. Springer-Verlag.
	Schröder, H. (1977): Mikrobiologisches Praktikum. Volk und Wissen, Berlin.
	Wöstemeyer, J., Schimek, C., Siegmund, L. (2018): Grundpraktikum Mikrobiologie. UTB.

Module component 2 — Microbiological laboratoy practice

Semester:	3
Coordinator:	Prof. Dr. Andreas Linde
Lecturer:	Prof. Dr. Andreas Linde, Prof. Dr. Jörg Schumacher
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	12
Teaching form:	Practical exercise (30 h) Self-study (45 h)
Language:	English
Module type:	Partly-blocked
Examination form:	Work report (25%), Project presentation (25 %)
Entry requirements:	Laboratory standards and experimental principles
Goal:	The participants will be able to plan scientific laboratory experiments under guidance and supervision and to conduct and evaluate them largely

independently. They are familiar with the laboratory activities required for this. They are able to scientifically reflect and appropriately present the results of their independently designed experiments.

Content:	In group work, the students set up a laboratory-based experiment with selected phyto- or entomopathogenic microorganisms, which is supervised over a defined observation period and finally evaluated. The results are presented and discussed in a presentation.
Recommended related elective modules:	Phytopathologische Grundlagen und Umweltmonitoring, Angewandte Gehölzpathologie
Competences:	Technical comptence (60%) Methodological competence (40%)

Literature:

Vega, F.E.; Kaya, H.K. (2012): Insect Pathology. Elsevier, 490p

Lacey, L.A. (2008): Manual of Techniques in Insect Pathology. Elsevier, 504p

Schramm, K.-H., Gerlach, W. (1972): Kulturen phytopathogener Pilze der Deutschen Sammlung für Mikroorganismen (DSM) am Institut für Mykologie der Biologischen Bundesanstalt (IMB). Mitt. Biol. Bundesanstalt, Heft 145.

Fuchs, G., Schlegel, H. G. (2017): Allgemeine Mikrobiologie. Thieme-Verlag.

*gesonderte, jeweils themenorientierte Literaturempfehlungen

E   Specialisation module

Semester: 3 oder 4 oder 6

Module coordinator: Head of study programme

Status: Elective module

Goal: The students are enabled to expand, deepen and practice their technical and methodological knowledge as well as their competences in a special field outside their own curriculum. The individual selection allows a personal profile in the context of the learning objectives and professional qualification of the study programme.

Examination form:

ECTS-Credits: 6

SWH: 4

Module component 1   Specialisation module

Semester: 3,4,6

Coordinator: Head of study pgroamme

Lecturer: NN

ECTS-Credits: 6

SWH: 4

Workload: 150 h / Semester

Max. study places:
Teaching form:

Language:

Module type:

Examination form:

Entry requirements:

Goal: Students are enabled to expand, deepen and test their technical and methodological knowledge as well as their competences in a specific field outside of their own curriculum. The individual selection allows a personal profile in the context of the learning objectives and professional qualification of the study programme.

Content: The contents of the module vary depending on the corresponding offer and individual or selection. Courses can be chosen which
- originate from other curricula then the Faculty of Forest and Environment, other study programmes of the EUSD, other universities in Germany and abroad or scientifically related institutions,
  or
- newly created and offered by lecturers without curricular commitment, e.g. in the context of research and development projects,
  and

are assessed and approved by the head of the study programme after application as qualifying in the sense of the programme objectives

Recommended related elective modules:

Competences:

Literature:

E Agroforestry Systems

Semester:	3 or 4 Semester
Module coordinator:	Dr. Ralf Bloch (ralf.bloch@hnee.de)
Status:	Elective module
Goal:	The students are able to understand agroecological interrelationships, political framework conditions and potentials of different agroforestry systems and, above all, to assess and evaluate them with regard to their practical applicability. The students understand the relevance of the parameters collected on the agroforestry experimental plot and are able to plan, conduct and evaluate a corresponding experimental setup.
Examination form:	Term paper (50%) und Oral report (50%)
ECTS-Credits:	6
SWH:	4

Module component 1 — Agroforestry Systems

Semester:	3, 4
Coordinator:	Dr. Ralf Bloch
Lecturer:	Prof. Dr. Tobias Cremer, Dr. Ralf Bloch
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places:	-
Teaching form:	Lecture (28 h), Seminar (12h), Project (80 h), Self-study (30 h)
Language:	German
Module type:	continuous
Examination form:	Term paper (50%) und Oral report (50%)
Entry requirements:	-

Goal:	The students are able to understand agroecological interrelationships, political framework conditions and potentials of different agroforestry systems and, above all, to assess and evaluate them with regard to their practical applicability. The students understand the relevance of the parameters collected on the agroforestry experimental plot and are able to plan, conduct and evaluate a corresponding experimental setup.
Content:	Within the scope of the interdisciplinary university project "Ackerbau(m)", students will learn the basics of agroforestry with the following contents: Basics of agroforestry (history, classification, distribution, ecological and economic challenges and potentials), preparation and implementation of the planting of an agroforestry system in the Löwenberger Land (Brandenburg), planning and start of long-term scientific data collection, data documentation and evaluation on the model area. Furthermore, case studies from the fields on nature conservation in agricultural landscapes, agroecology and ecosystem provisioning are presented.
Recommended related elective modules:	
Competences:	Technical competence (40%) Methodological competence (20%) Social competence (30 %) Personnel competence (10 %)
Literature:	Böhm, C. (2012): Ökonomische und ökologische Bewertung von Agroforstsystemen in der landwirtschaftlichen Praxis (AgroForstEnergie). Technische Universität Cottbus
	Böhm, C. (2017): Bäume in der Land(wirt)schaft- von der Theorie in die Praxis. Tagungsband 5. Forum Agroforstsysteme. BTU Cottbus.
	Hofmann, P., Hübner-Rosenau, D. (2016). Agroforst-Modellprojekt im Löwenberger Land. Eine Konzeption im Spannungsfeld zwischen wissenschaftlicher Aussagekraft, landwirtschaftlicher Praktikabilität und komplexer Multifunktionalität. Bachelor-Abschlussarbeit an der HNE Eberswalde.
	Jose, S. (2012): Agroforestry for conserving and enhancing biodiversity. In: Agroforest Syst 85 (1), S. 1–8. DOI: 10.1007/s10457-012-9517-5.
	Knauer, N. (1993): Ökologie und Landwirtschaft: Situation - Konflikte - Lösungen; Ulmer, Stuttgart
	Luthardt, V., Brauner, O., Dreger, F., Friedrich, S., Garbe, H., Hirsch, A.-K., Kabus, T., Krüger, G., Mauersberger, H., Meisel, J., Schmidt, D., Täuscher, L., Vahrson, W.-G., Witt, B. & M., Zeidler (2006): Methodenkatalog zum Monitoring-Programm der Ökosystemaren Umweltbeobachtung in den Biosphärenreservaten Brandenburgs, 4. akt. Ausgabe, Selbstverlag, FH-Eberswalde
	Reeg, T., Bemmann A., Konold W., Murach D., Spiecker H. (2009): Anbau und Nutzung von Bäumen auf landwirtschaftlichen Flächen. Wiley-Vch-Verlag, Weinheim.
	Unseld, R., Reppin, N., Eckstein, K., Zehlius-Eckert, W., Hoffmann, H., Huber, T. (2011): Leitfaden Agroforstsysteme. Möglichkeiten zur naturschutzgerechten Etablierung von Agroforstsystemen. BfN München. Online verfügbar: https://www.bfn.de/fileadmin/MDB/documents/themen/landwirtschaft/BfN_Agroforst_Skript.pdf

E   Academic writing and presenting

Semester:	3
Module coordinator:	Language Centre (sprachenzentrum@hnee.de)
Status:	Elective module
Goal:	Students can understand and apply the principles of academic writing and presenting.
Examination form:	Oral report (100%)
ECTS-Credits:	6
SWH:	4

Module component   Academic writing and presenting

Semester:	3
Coordinator:	Language Centre
Lecturer:	Language Centre
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places: **Teaching form:**	- Seminar (60 h), Selbststudium (90 h)
Language:	English
Module type:	continuous
Examination form:	Oral report (100%)
Entry requirements:	-
Goal:	Students can understand and apply the principles of academic wirting and presenting. They can communicate effectively in an academic context.
Content:	This module imparts the principles of academic writing and presenting. Students analyse academic papers and presentations and work individually on short texts and presentations. Course objectives are:

- to differentiate between different kinds of writing tasks in an academic context
- to analyse writing tasks and structure texts accordingly
- to find appropriate text types for academic work
- to take notes effectively
- to develop a critical approach to reading
- to know how to use citation conventions
- to avoid plagiarism
- to understand the importance of proofreading and editing
- to understand the requirements of presenting in an academic context
- to present with confidence in an academic context

A particular emphasis is out on individual academic work and on individual needs and difficulties. The examination form is a presentation held by studends at the end of the course.

Recommended related elective modules:

Competences: Methodological competence (50%), Personnel competence (50%)

Literature: Bailey, S. (2017). Academic Writing. A Handbook for International Students (5th ed.). Routledge.
Burton, G. (2014). Presenting: Deliver Presentations with Confidence (2nd ed.). Collins.

E   Forest and society

Semester:	4
Module coordinator:	Prof. Dr. Martin Welp (martin.welp@hnee.de)
Status:	Elective module
Goal:	Students will be able to understand and implement forms of forest and natural resource management targeted to local needs in rural as well as urban and peri-urban regions.
Examination form:	Project presentation (50%), Technical discussion 20 min (50%)
ECTS-Credits:	6
SWH:	4

Module component 1   Urban forestry

Semester:	4
Coordinator:	Prof. Dr. Martin Welp
Lecturer:	Prof. Dr. Martin Welp
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	-
Teaching form:	Lecture (15 h), Practical exercise (15 h), Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (50 %)
Entry requirements:	-
Goal:	Students will be able to analyze and systematize the specific social demands on urban and peri-urban forests and develop management strategies from them. The focus is on the ecosystem services that contribute to the resilience of cities as well as the different actors that are relevant for the management of urban green.

Content:	Urbanisation is one of the major global trends that poses new challenges to natural resource managers. The concept of resilience in the urban context is explained using theory and practical examples.
	The requirements of different groups with regard to urban and peri-urban forests will be empirically assessed using local examples (Berlin, Eberswalde) and supported with literature. During a one-day excursion, ecosystem services relevant for cities will be mapped and systematised afterwards. Future risks for the provision of ecosystem services are assessed and supplemented with examples from abroad. On this basis, the students develop exemplary adaptation and management strategies for urban green spaces with an international focus.
Recommended related elective modules:	
Competences:	Technical competence (40 %) Methodological competence (20 %) Social competence (20 %) Personnel competence (20%)
Literature:	Haaland, C., & van Den Bosch, C. K. (2015). Challenges and strategies for urban green-space planning in cities undergoing densification: A review. Urban forestry & urban greening, 14(4), 760-771.
	Missall, S., Abliz, A., Halik, Ü., Thevs, N., & Welp, M. 2018. Trading Natural Riparian Forests for Urban Shelterbelt Plantations—A Sustainability Assessment of the Kökyar Protection Forest in NW China. Water, 10(3), 343.
	Welp, M., Ward, N., Missall, S., Abliz, A. and Halik, Ü. 2016. Providing Urban Ecosystem Services for Human Well-Being: A Comparison of Exemplary Institutional Arrangements in China and Germany. In: Wang, F. & Prominski, M. (eds.) Urbanization and Locality: Strengthening Identity and Sustainability by Site-Specific Planning and Design. Springer. 384 p. 229-247.

Module component 2 — Community based forestry and agroforestry

Semester:	4
Coordinator:	Prof. Dr. Martin Welp
Lecturer:	Prof. Dr. Martin Welp, Dr. Astrid Schilling
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	-
Teaching form:	Lecture (25 h), Practical exercise (5h), Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Technical discussion (50%)

Entry requirements: -

Goal: Students will be able to use guiding principles for sustainable management of commons resources and promote agroforestry systems.

Content: Community-based forestry implies decentralization, greater stakeholder participation, and collaboration between central and local governments. The approach advocates community involvement, giving more rights with regard to forest resources. Managing forests to meet the growing demand for timber, fuel wood, fodder and other non-timber forest products can benefit from local empowerment.

Forms of social forestry include among others community forestry , leasehold forestry and agroforestry. The latter is analysed on the basis of international case studies as well as local examples. Different aspects of agroforestry discussed on the basis of case studies presented by students.

The module concludes with discussing how the approach of social forestry can lead to a constructive dialogue with local stakeholders, and under
which conditions it can catalyze rural development.

Recommended related elective modules:

Competences: Technical competence (40 %) Methodological competence (30 %) Social competence (20 %) Personnel competence (10%)

Literature: -

E   Environmental governance in times of climate change

Semester:	4
Module coordinator:	Prof. Dr. Martin Welp (martin.welp@hnee.de)
Status:	Elective module
Goal:	Students are enabled to understand complex interactions between climate change, the main drivers and impacts of it as well as the policy and governance responses on different levels.
Examination form:	Project presentation (50%), Project report (50%)
ECTS-Credits:	6
SWH:	4

Module component 1   Climate change – causes and scenarios

Semester:	4
Coordinator:	Prof. Dr. Martin Welp
Lecturer:	Prof. Dr. Martin Welp, Prof. Dr. Manfred Stock et al.
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places: **Teaching form:**	- Lecture (20 h), Seminar (10 h), Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (50 %)
Entry requirements:	-
Goal:	Students learn the physical fundamentals of climate change, the anthropogenic drivers of rapid climate change since the beginning of

Content:

industrialisation as well as the impacts of climate change at present and in future.

Climate change is one of the major global threats to ecosystem functionality and human wellbeing. In forest management and more broadly ecosystem management both mitigation (avoiding emissions, CO_2 uptake) and adaptation (adapting to changes in precipitation, temperatures, etc.) play an important role.

Students will learn the physical fundamentals of climate change as well as the history of how climate change was detected scientifically. The anthropogenic and non-anthropogenic drivers of climate change are assessed. Students learn basic features of climate global climate modelling and scenario-building and become literate in reading state to the art climate research results, such as summary for policy makers of the IPCC.

Regional climate impacts are analysed with the help of regional climate models as well available statistics on past extreme weather related events. This is the basis for an introduction in forest-based mitigation and adaptation strategies.

Recommended related elective modules:

Competences: Technical competence (60 %) Methodological competence (20 %) Social competence (10 %) Personnel competence (10%)

Literature: -

Module component 2 — Environmental governance

Semester:	4
Coordinator:	Prof. Dr. Heike Walk
Lecturer:	Prof. Dr. Heike Walk, Prof. Dr. Carsten Mann
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	-
Teaching form:	Lecture (20 h), Seminar 10h), Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Project report (50%)
Entry requirements:	-

Goal: Students get to know social and political sciences theories and concepts of environmental governance and climate policy. Social structures, institutions and actors are explained as a basis for deepening topics such as collaboration, protest behaviour and policy action. What does governance mean as a mechanism of control? We work out the different interests of state and non-state actors and look at the forms of interest representation and lobbying. Examples from environmental protection, forest management, biodiversity, and nature conservation are introduced to foster students' policy and social systems understanding.

Content: In addressing global climate change, no state can guarantee its citizens that it will solve this problem through national policies alone. Rather, states are dependent on international cooperation and governance structures to successfully tackle climate problems. The governments of these states are not the only actors who bring their interests into the governance arrangements. Private and non-state actors are also active in this field and engage in active lobbying.Lobbying can be seen as democratic interest mediation oriented towards the common good, but also as the organized influence of interest groups on politics. In this module we will deal with the topic of multi-level governance and lobbying.

Rooted in a new institutional economics and political sciences understanding, students will learn to distinguish between governance structures, institutions, actors and organisations. In particular they are familiar with key political sciences concepts for natural resources governance and policy. This enables students to understand institutional stability and change over time, policy choice and actor coalitions in order to handle multiple realities for collaboration, integrated and adaptive approaches, and sustainable resource management.

Recommended related elective modules:

Competences: Technical competence (70 %) Methodological comptence (10 %) Social competence (10 %) Personnel competence (10%)

Literature: -

E Certification and impact assesment

Semester:	4
Module coordinator:	Prof. Dr. Klaus Günther-Dieng NN
Status:	Elective module
Goal:	In contrast to state regulatory law, students know the economically oriented approach of certification systems, especially in the forestry sector, and its most widespread systems and their differences. Students are able to understand and apply the basics of environmental law as well as more detailed species and habitat protection regulations and environmental assessment procedures such as EIA and FFH impact assessment.
Examination form:	Project presentation (100%)
ECTS-Credits:	6
SWH:	4

Module component 1 — Certification and impact assessment

Semester:	4
Coordinator:	Prof. Dr. Klaus Günther-Dieng NN
Lecturer:	Prof. Dr. Klaus Günther-Dieng NN
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places:	-
Teaching form:	Lecture (40 h), Practical exercise (20 h), Self-study (90 h)
Language:	English
Module type:	continuous
Examination form:	Project presentation (50%)

Entry requirements: -

Goal: In contrast to state regulatory law, students know the economically oriented approach of certification systems, especially in the forestry sector, and its most widespread systems and their differences. Students are able to understand and apply the basics of environmental law as well as more detailed species and habitat protection regulations and environmental assessment procedures such as EIA and FFH impact assessment.

Content: The module presents the most important certification systems, their history and current distribution worldwide and in Germany. The differences in principle, organisation and costs between the systems are worked out in group work. A test certification is prepared and exemplarily carried out and analysed on a concrete forest enterprise.
Starting from the general objectives and methods of environmental law, the legal bases of the EIA and FFH impact assessment as well as the special assessment of species protection, procedures and participation requirements, assessment methods and compensation options are presented and discussed. In addition to the theoretical information, concrete procedural documents of current projects are also included in the lessons.

Recommended related elective modules:

Competences: Technical comptence (50%), Methodological competence (50%)

Literature: Homepage FSC: https://www.fsc.org/en;
Homepage PEFC: https://pefc.org/
Verfahrensdokumente

E   Intercultural communication and extension methods

Semester:	4
Module coordinator:	Prof. Dr. Martin Welp (martin.welp@hnee.de)
Status:	Elective module
Goal:	Students are sensitized to challenges in intercultural communication, can reflect their own behaviour, get practice in intercultural communication and can apply this knowledge and experience for effective communication in development cooperation and extension work.
Examination form:	Technical discussion 20 min (100%)
ECTS-Credits:	6
SWH:	4

Module component 1   Intercultural communication

Semester:	4
Coordinator:	Prof. Dr. Martin Welp
Lecturer:	Prof. Dr. Martin Welp
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	-
Teaching form:	Lecture (15 h), Practical exercise (15 h), Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Technical discussion (50%)

Goal:	Students understand different concepts of culture, are aware of communication barriers and how to overcome these, by self-reflection and increased awareness of cultural differences.
Content:	In a globalized and interdependent world intercultural communication skills is increasingly important. In development cooperation and (applied) research projects work is frequently organised in interdisciplinary and international teams. The module gives an overview on different concepts of culture. It then discusses barriers in intercultural communication and seeks ways to overcome them with the help of relevant communication theories. Communication theories are also relevant when analysing the role of language the interplay with non-verbal communication. Role plays and practical exercises with students, help to improve intercultural communication competences. Furthermore, students prepare a presentation based on an intercultural communication case study. Guest lecturers share with students insights about professional challenges in the field of development cooperation as well as multicultural communication from a policy science perspective.
Recommended related elective modules:	-
Competences:	Technical competence (25%) Methodological competence (25%) Social competence (25%) Personnel competence (25%)
Literature:	-

Module component 2 — Extension methods in international cooperation

Semester:	4
Coordinator:	Prof. Dr. Martin Welp
Lecturer:	Prof. Dr. Martin Welp
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	-
Teaching form:	Lecture (15 h, Practical exercise (15 h), Self-study (45 h)
Language:	English
Module type:	continuous
Examination form:	Technical discussion (50%)
Goal:	Students are enabled to distinguish between forms and channels for extension work and can apply these for real world cases

Content:

The course provides the scientific fundamentals and concrete tools that facilitate
extension in the context of ecosystem management. In the context of real-life and simulated cases (role plays) we conduct situational and audience analysis and base the selection of adequate strategies and extension methods on these two assessments. Techniques and skills of organising and moderating meetings, preparing and delivering presentations are trained in practical exercises. The use of different media and equipment is assessed and tested with peer students, including mobile applications, social media, internet-based learning. All above is embedded in a communication strategy and plan. The success of extension is measured with the help of quantitative and qualitative evaluation techniques.

Recommended related elective modules:

Competences:

Technical competences (25%) Methodological competences (25%) Social competences (25 %) Personnnel competences (25%)

Literature:

Reed, M. S. (2008). Stakeholder participation for environmental management: a literature review. Biological conservation, 141(10), 2417-2431.

Ruppert D, Welp M, Spies M, Thevs N. 2020. Farmers' perceptions of tree shelterbelts on agricultural land in rural Kyrgyzstan. Sustainability 12(3):1093.

E Digital analysis of forest ecosystems

Semester:	4
Module coordinator:	Prof. Dr. Jan-Peter Mund (jan-peter.mund@hnee.de)
Status:	Elective module
Goal:	In this module students acquire enhanced methodical knowledge and advanced technical skills analyzing and integrating digital sensor data and practical applications in forest ecosystem analytics. Students get the theoretical background and study real-case experiences from digital (3D) forest monitoring examples and management use cases.
Examination form:	Project report (100%)
ECTS-Credits:	6
SWH:	3

Module component 1 — Digital analysis of forest ecosystems

Semester:	4
Coordinator:	Prof. Dr. Jan-Peter Mund
Lecturer:	Prof. Dr. Jan-Peter Mund, NN
ECTS-Credits:	6
SWH:	3
Workload:	150 h / Semester
Max. study places:	25
Teaching form:	Lecture (15 h), Practical exercise (30 h), Self-study (105 h)
Language:	English
Module type:	continuous
Examination form:	Project report (100%)

Entry requirements:

Goal:

In this module students acquire enhanced methodical knowledge and advanced technical skills analyzing and integrating digital sensor data and practical applications in forest ecosystem analytics. Students get the theoretical background and study real-case experiences from digital (3D) forest monitoring examples and management use cases.

Content:

Digital (3D) forest analysis and management has become an innovative and complex topic in modern forest-ecosystem analysis and management.

In this elective module students learn how to collect digital data for forest and ecosystem analysis and monitoring purposes integrating such structured digital data into long term monitoring and ecosystem management schemes. Students will apply forest monitoring and digital sensor data collection using innovative remote sensing devices such as wearable laser scanners and modern consumer UAVs and learn the theoretical and practical handling of such devices including software analytics of digital ecosystem data. Student will integrate and distribute their monitoring and project data using web-services and modern 3D objects like virtual forest and digital ecosystem twins.

Recommended related elective modules:

Waldökosystem Management und Analyse
Übungen zu Wildbiologie und Wildtiermanagement I
Agroforstsysteme
Walderschließung
Waldnutzung
Future strategies in sustainable forest management
Biosphere reserves and ecosystem development
Forest landscape restoration

Competences:

Technical competence (30%) Media competence (20%) Methodological competence (50%)

In addition, an updated list of GIS literature and ecosystem related geospatial

Literature:

will be made available at the beginning of the course

E Exercises in forestry work and procedural technology

Semester:	4
Module coordinator:	Prof. Dr. Dr. h.c. Michael Mussong (michael.mussong@hnee.de)
Status:	Wahlpflichtmodul
Goal:	Students are able to implement technical, methodological and planning aspects of relevant forestry work.
Examination form:	Protocol (100%)
ECTS-Credits:	6
SWH:	4

Module component 1	**Exercises in forestry work and procedural technology**
Semester:	4
Coordinator:	Prof. Dr. Dr. h.c. Michael Mussong
Lecturer:	Prof. Dr. Dr. h.c. Michael Mussong
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places:	17
Teaching form:	Practical exercise (50 h), Seminar (10 h), Self-study (90 h)
Language:	German
Module type:	Partly-blocked
Examination form:	Protocol (100 %)
Entry requirements:	-

Goal:

Students are able to implement technical, methodological and planning aspects of relevant forestry work.

Content:

Stand establishment and maintenance, timber harvest planning, time and performance calculation; machinery and labour cost calculation; hazard analysis; quality assurance; among others.

Recommended related elective modules:

Competences:

Technical competence (50%) Methodological competence (25%) Social competence (25%)

Will be announced at the beginning of the course.

Literature:

E   Forest road development

Semester:	4
Module coordinator:	Prof. Dr. Dr. hc. Michael Mussong (michael.mussong@hnee.de)
Status:	Elective module
Goal:	Students will be able to implement their practical knowledge of planning, construction and maintenance of economic and recreational trails in the forest.
Examination form:	Project report (100%)
ECTS-Credits:	6
SWH:	4

Module component 1   Forest road construction

Semester:	4
Coordinator:	Prof. Dr. Dr. h.c. Michael Mussong
Lecturer:	Prof. Dr. Dr. h.c. Michael Mussong
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	17
Teaching form:	Seminar (5 h), Practical exercise (25 h), Self-study (45 h)
Language:	German
Module type:	continuous
Examination form:	Project report (50 %)
Entry requirements:	-
Goal:	The students possess practical knowledge for an adapted forest path construction and are able to carry out a road project planning.

Content:	Practical individual planning: Project planning of a forest road suitable for trucks.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (25%) Social competence (25%)
Literature:	Will be announced at the beginning of the course.

Module component 2 — Forest road development for recreational use

Semester:	4
Coordinator:	Prof. Dr. Dr. h.c. Michael Mussong
Lecturer:	Prof. Dr. Dr. h.c. Michael Mussong
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	17
Teaching form:	Seminar (5 h), Practical exercise (25 h), Self-study (45 h)
Language:	German
Module type:	Partly-blocked
Examination form:	Project report (50 %)
Entry requirements:	-
Goal:	The students possess the basic knowledge required for the planning of recreationally relevant development infrastructure and are able to implement this knowledge in concrete planning measures.
Content:	Practical general and individual planning: Project planning of a development measure for recreational purposes.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (25%) Social competence (25%)
Literature:	Will be announced at the beginning of the course.

E   Applied Economics

Semester:	4
Module coordinator:	Prof. Dr. Wolf-Henning von der Wense (vdwense@hnee.de)
Status:	Elective module
Goal:	Students will be able to establish, analyze and manage a company in an international context.
Examination form:	Technical discussion 20 min (100%)
ECTS-Credits:	6
SWH:	4

Module component 1   Entrepreneurship

Semester:	4
Coordinator:	Prof. Dr. Wolf-Henning von der Wense
Lecturer:	Prof. Dr. Wolf-Henning von der Wense
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	
Teaching form:	Lecture (24h), Practical exercise (6h), Self-study (45h)
Language:	German
Module type:	continuous
Examination form:	Technical discussion 20 min (50%)
Entry requirements:	-
Goal:	Students develop ideas for starting a business. They are able to establish and successfully manage their own company in an international context.

Content:	Students learn all the basic content and skills necessary to start a business. They create a business plan. First, ideas for potential business start-ups are developed in a team and relevant market and competitor analyses are carried out. Necessary research and surveys are carried out in order to prepare bases for strategic and tactical decisions for various addressees (investors, banks, public authorities). In particular, various plans are prepared and checked for their sensitivity: Financing Plan, Investment Plan, Work Volume and Capacity Plan, Economic Plan and Liquidity Plan. Students defend their business plan and are able to implement it.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (50%)
Literature:	Jung, H. 2016. Allg. Betriebswirtschaftslehre, 13. Aufl., Oldenbourg. München
	Oesten, G. und Roeder, A. 2012. Management von Forstbetrieben, Bd. 1 – Grundlagen, Betriebspolitik. 3. Aufl., ife.uni-freiburg.de
	Oesten, G. und Roeder, A. 2012. Management von Forstbetrieben, Bd. 2 – Management- und Informationssystem. 1. Aufl., ife.uni-freiburg.de
	Oesten, G. und Roeder, A. 2012. Management von Forstbetrieben, Bd. 3 - Leistungssytem, Zusammenfassung und Ausblick. 1. Aufl., ife.uni-freiburg.de
	Sagl, W. 1995. Bewertung in Forstbetrieben. Parey. Berlin, Oxford, Blackwell Schmitthüsen, F. et al. 2009. Unternehmerisches Handeln in der Wald- und Holzwirtschaft. 2. Aufl. dbv Gernsbach

Module component 2 — Enterprise management

Semester:	4
Coordinator:	Prof. Dr. Wolf-Henning von der Wense
Lecturer:	Prof. Dr. Wolf-Henning von der Wense
ECTS-Credits:	3
SWH:	2
Workload:	75 h / Semester
Max. study places:	
Teaching form:	Lecture (24h), Practical exercise (6h), Self-study (45h)
Language:	German
Module type:	continuous
Examination form:	Technical discussion 20 min (50%)
Entry requirements:	-

Goal:	Students will be able to analyze companies in terms of their economic performance, apply models to optimize economic processes and evaluate states.
Content:	This sub-module provides students with knowledge of internal operations and processes as well as their economic significance. The operational process areas (procurement, production, sales, investment and financing) are dealt with. Forestry operations are examined from an optimization point of view. The students work with cost and performance accounting models and learn to deal with calculations and ratios and to interpret them. Basic knowledge regarding the evaluation of forest enterprises, e.g. the evaluation of game damage, is imparted. The students use internationally common terms of (forest) economics.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (50%)
Literature:	Current literature on starting a business.

E   Service learning

Semester: 4

Module coordinator: Prof. Dr. Heike Walk (heike.walk@hnee.de)

Status: Elective Module

Goal: By reflecting on the experiences gained in the context of sustainable engagement in connection with the intensive examination of subject content, the students are enabled to develop subject-specific and interdisciplinary, personality-building competences, such as communication competences, self-efficacy, the ability to work in a team and others. The students learn about the importance of civil society engagement and can assess and reflect on the opportunities and limits related to their respective subject area.

Examination form: Project presentation (100%)

ECTS-Credits: 6

SWH: 4

Module component 1   Service learning

Semester: 4

Coordinator: Prof. Dr. Heike Walk

Lecturer: Prof. Dr. Heike Walk et al.

ECTS-Credits: 6

SWH: 4

Workload: 150 h / Semester

Max. study places: 50

Teaching form: Seminar (30 h), Project (30 h), Self-study (90 h)

Language: German

Module type: continuous

Examination form: Project presentation (100%)

Entry requirements: -

Goal: By reflecting on the experiences gained in the context of sustainable engagement in connection with the intensive examination of subject content, the students are enabled to develop subject-specific and interdisciplinary, personality-building competences, such as communication competences, self-efficacy, the ability to work in a team and others. The students learn about the importance of civil society engagement and can assess and reflect on the opportunities and limits related to their respective subject area.

Content: The students engage in a non-profit, non-university field of activity and contribute their professional expertise there. The students...

- expand sustainability competences in the context of learning and engagement,
- question and examine their commitment on the basis of the 17 Sustainable Development Goals (SDGs) of the United Nations
- acquire basic social science knowledge in the subject area of civil society engagement, non-profit organisations and service learning,
- apply subject-specific knowledge and experience in non-university contexts,
- deal purposefully with methods of project development and counselling,
- develop social competences as key qualifications, especially teamwork, communication and cooperation skills.
- reflect on further competences of personal development, e.g. responsibility, empathy, resilience and initiative.
- check contents from teaching for practical suitability and reflect on their experiences with them at the university in exchange with the entire seminar.

Recommended related elective modules:

Competences: Technical competence (20 %), Methodological competence (40%), Social competence (40%)

Literature: Connor-Greene, Patricia A. (2016): Problem-Based Service Learning. The Evolution of a Team Project. In: Teaching of Psychology 29 (3), S. 193–197. DOI: 10.1207/S15328023TOP2903_02.

Backhaus-Maul, Holger; Roth, Christiane (2013): Service Learning an Hochschulen in Deutschland. Ein erster empirischer Beitrag zur Vermessung eines jungen Phänomens. Wiesbaden: Springer VS.

Bowen, Glenn (2010): Service Learning in the Scholarship of Teaching and Learning. Effective Practices. In: ij-sotl 4 (2). DOI: 10.20429/ijsotl.2010.040218.

Butin, Dan W. (2010): Service-learning in theory and practice. The future of community engagement in higher education. 1st ed. New York: Palgrave Macmillan.

Kamp, Georg; Haan, Gerhard de; Lerch, Achim; Martignon, Laura; Müller-Christ, Georg; Nutzinger, Hans Gottfried; Wütscher, Friederike (2008): Nachhaltigkeit und Gerechtigkeit. Grundlagen und Schulpraktische Konsequenzen. Dordrecht: Springer (Wissenschaftsethik und Technikfolgenbeurteilung, 33, 33).

Levintova, Ekaterina M.; Mueller, Daniel W. (2014): Sustainability. Teaching an Interdisciplinary Threshold Con-cept through Traditional Lecture and Active Learning. In: Canadian Journal for the Scholarship of Teach-ing and Learning (CJSoTL) 6 (1), S. 1–20. DOI: 10.5206/cjsotl-rcacea.2015.1.3.

M   Practical study semester abroad

Semester:	5
Module coordinator:	Prof. Dr. Dr. hc. Michael Mussong (michael.mussong@hnee.de)
Status:	Mandatory module
Goal:	Students are enabled to engage in international projects in the field of multifunctional and sustainable management of forest ecosystems.
Examination form:	Project report (50%) (not graded), Project presentation (50%) (not graded)
ECTS-Credits:	30
SWH:	30

Module component 1   Practical study semester abroad

Semester:	5
Coordinator:	Prof. Dr. Dr. hc. Michael Mussong
Lecturer:	NN
ECTS-Credits:	30
SWH:	30
Workload:	750 h / Semester
Max. study places:	
Teaching form:	Project (450 h), Self-study (300 h)
Language:	English, tbd
Module type:	blocked
Examination form:	Project report (50%) (not graded), Project presentation (50%) (not graded)
Entry requirements:	-
Goal:	Students are enabled to engage in international projects in the field of multifunctional and sustainable management of forest ecosystems.

Content: Collaboration in scientifically based, practical projects with a concrete connection to the forest and the study programme.

Recommended related elective modules:

Competences: Technical competence (25%) Methodological competence (25%) Social competence (25%) Personnel competence (25%)

Literature: Will be announced at the beginning of he course.

M Bachelor thesis

Semester:	6
Module coordinator:	Lecturers of the faculty
Status:	Mandatory module
Goal:	Students are able to write a scientific paper on a subject-related topic of their own choice. In the context of their work, students can formulate subject-specific questions / working hypotheses and develop and apply known methodological approaches or new methods. They are able to analyse data scientifically and present it appropriately. Conclusions can be evaluated and critically discussed with results and statements of comparable studies. Students are able to write scientifically and know the principles of good scientific practice.
Examination form:	Project report (100%)
ECTS-Credits:	12
SWH:	2

Module component 1 — Bachelor thesis

Semester:	6
Coordinator:	Lecturers of the faculty
Lecturer:	Lecturers of the faculty
ECTS-Credits:	12
SWH:	2
Workload:	300 h / Semester
Max. study places:	
Teaching form:	Project (30 h), Self-study (270 h)
Language:	English, German
Module type:	continuous
Examination form:	Project report (100%)

Entry requirements: -

Goal: Students are able to write a scientific paper on a subject-related topic of their own choice. In the context of their work, students can formulate subject-specific questions / working hypotheses and develop and apply known methodological approaches or new methods. They are able to analyse data scientifically and present it appropriately. Conclusions can be evaluated and critically discussed with results and statements of comparable studies. Students are able to write scientifically and know the principles of good scientific practice.

Content: Accompanied by the supervisors, the students carry out a largely independent, scientific project, or only a part of it, and collect their own results. They apply suitable research methods, discuss the results in the context of comparable studies, taking into account relevant publications, and formulate recommendations for practice. As a result, a scientific paper is produced on the basis of independent investigations that are conducive to gaining knowledge in the area of the objectives of the degree programme.

Recommended related elective modules:

Competences: Technical competence (40%), Methodological competence (30%), Personnel competence (20%), Media competence (10%)

Literature: Varies according to topic

E Future strategies in sustainable forest management

Semester:	6
Module coordinator:	Prof. Dr. Peter Spathelf (peter.spathelf@hnee.de)
Status:	Elective module
Goal:	The students are qualified to derive and document approaches to sustainable forest management on the basis of a concrete forest section. For this purpose, the students use data from site and forest growth studies as well as spatial data of the forest objects to be developed (including forest inventory). The project focuses on (silvicultural) planning at stand and operation level and its implementation with concrete silvicultural measures. The competences are supplemented with tasks from the fields of recreational planning and other special planning as well as the planning of measures for the adaptation of forests to climate change.
Examination form:	Project report (50%) und Project presentation (50%)
ECTS-Credits:	6
SWH:	4

Module component 1	**Future strategies in sustainable forest management**
Semester:	6
Coordinator:	Prof. Dr. Peter Spathelf
Lecturer:	Prof. Dr. Peter Spathelf, Prof. Dr. Jan-Peter Mund, Prof. Dr. Wolf-Henning v.d. Wense NN et al.
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places:	
Teaching form:	Lecture (5 h), Project (55 h), Self-study (90 h)
Language:	English

Module type:	blocked
Examination form:	Project report (50%) und Project presentation (50%)
Entry requirements:	-
Goal:	The students are qualified to derive and document approaches to sustainable forest management on the basis of a concrete forest section. For this purpose, the students use data from site and forest growth studies as well as spatial data of the forest objects to be developed (including forest inventory). The project focuses on (silvicultural) planning at stand and operation level and its implementation with concrete silvicultural measures. The competences are supplemented with tasks from the fields of recreational planning and other special planning as well as the planning of measures for the adaptation of forests to climate change.
Content:	Analysis of spatial data, inventory and analysis of forest conditions and operational structures, natural and economic success monitoring of past planning periods, forest growth and economic modelling, short- to long-term planning based on this; preparation of sub-areas of management plans; implementation of special planning and derivation of adaptation measures to climate change.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence(30%) Social competence (20%)
Literature:	Ebert, H.-P. 2006. Die Behandlung von häufig vorkommenden Baumarten. (Hauptbaumarten). Schriftenreihe der Hochschule für Forstwirtschaft Rottenburg. Nr. 14. 235 S.

Fritz, P. (Hrsg.) 2006. Ökologischer Waldumbau in Deutschland. Fragen, Antworten, Perspektiven. Oekom-Verlag. 351 S.

Oesten, G. und Roeder, A. 2012. Management von Forstbetrieben, Bd. -3 ife.uni-freiburg.de.

Rittershofer, F. (1999). Waldpflege und Waldbau für Studium und Praxis. Gisela Rittershofer Verlag, Freising. 492 S.

Röhrig, E., Bartsch, N. & Von Lüpke, B. 2006. Waldbau auf ökologischer Grundlage. 7. Auflage. Verlag Eugen Ulmer Stuttgart. 479 S.

Sagl, W. 1995. Bewertung in Forstbetrieben. Parey. Berlin, Oxford, Blackwell.

Schmitthüsen, F. et al. 2009. Unternehmerisches Handeln in der Wald- und Holzwirtschaft. 2. Aufl. dbv Gernsbach.

Setzer, F., Spinner, K. 2007. Waldbesitzerhandbuch. Neumann-Neudamm.

Tzschupke, W., 1992: Die forstliche periodische Erfolgskontrolle in der Bundesrepublik Deutschland: eine Darstellung ihrer geschichtlichen und theoretischen Grundlagen sowie ihrer gegenwärtigen Praxis mit Vorschlägen für ihre Weiterentwicklung

Gadow, K. v. (Hrsg.), 2001: Risk Analysis in Forest Management. Vol 2 in der Buchserie Managing Forest Ecosystems, Kluwer Academic Publishers: 237 S.

Von Gadow, K. (2005). Analyse und Entwurf der Waldentwicklung. Universitätsdrucke im Universitätsverlag Göttingen.

Von Teuffel, K., Baumgarten, M., Hanewinkel, M., Konold, W., Sauter, U.H., Spiecker, H., von Wilpert, K. (Hrsg.) 2005. Waldumbau für eine zukunftsorientierte Waldwirtschaft. Ergebnisse aus dem Südschwarzwald.

E Biosphere reserves and ecosystem development

Semester:	6
Module coordinator:	Biosphere NN
Status:	Elective module
Goal:	Students will be able to assess the potential and current impact of UNESCO biosphere reserves as places of learning and model regions for ecosystem-based sustainable development and to work out the current management challenges on the basis of selected examples.
Examination form:	Project report(100%)
ECTS-Credits:	6
SWH:	4

Module component 1 — Biosphere reserves and ecosystem development

Semester:	6
Coordinator:	Biosphere NN
Lecturer:	Biosphere NN
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places:	12 (+12 Fowis)
Teaching form:	Lecture (15 h), Project (45h), Self-study (90 h)
Language:	English
Module type:	Partly-blocked
Examination form	
	Project report(100%)
Entry requirements:	-

Goal:	Students will be able to assess the potential and current impact of UNESCO biosphere reserves as places of learning and model regions for ecosystem-based sustainable development and to work out the current management challenges on the basis of selected examples.
Content:	With the worldwide network of biosphere reserves in a large number of countries, a unique area for testing new paths to sustainable development has been created under the umbrella of the United Nations cultural organisation, UNESCO, as a result of the work of the Man and the Biosphere (MAB) programme. Biosphere reserves serve international cooperation, the exchange of experience and the creation of model areas in all biomes of the earth, in which it is to be demonstrated that people can live and manage in an ecosystem-friendly way, among other things by empowering them to participate in ecosystem management. In the module, existing approaches to biosphere reserve management are presented and reflected upon.
Recommended related elective modules:	
Competences:	
Literature:	Coetzer KL, Witkowski ET, Erasmus BF. Reviewing biosphere reserves globally: Effective conservation action or bureaucratic label? Biol Rev. 2014; 89(1):82–104. https://doi.org/10.1111/brv.12044 Reed, M.G. & M. F. Price (2019): UNESCO Biosphere Reserves Supporting Biocultural Diversity, Sustainability and Society. Routledge. Weitere Literatur wird im Modul zur Verfügung gestellt.

E Forest landscape restoration

Semester: 6

Module coordinator: Prof. Dr. Peter Spathelf (peter.spathelf@hnee.de)

Status: Elective module

Goal: Students are enabled to apply techniques of (forest) landscape restoration (FLR) after a variety of disturbance types such as afforestation, rehabilitation of degraded land, water resource management in order to restore basic ecosystem / forest functions and contributing to the well-being of humans in different (forest) biomes of the world.

Examination form: Project presentation (100%)

ECTS-Credits: 6

SWH: 4

Module component 1 Forest landscape restoration

Semester: 6

Coordinator: Prof. Dr. Peter Spathelf

Lecturer: Prof. Dr. Peter Spathelf et al.

ECTS-Credits: 6

SWH: 4

Workload: 150 h / Semester

Max. study places: 25

Teaching form: Lecture (40h), Practical exercise (20h), Self-study (90h)

Language: English

Module type: blocked

Examination form: Project presentation (100%)

Entry requirements: -

Goal:	Students are enabled to apply techniques of (forest) landscape restoration (FLR) after a variety of disturbance types such as afforestation, rehabilitation of degraded land, water resource management in order to restore basic ecosystem / forest functions and contributing to the well-being of humans in different (forest) biomes of the world.
Content:	The course provides insight into the basic approaches of Forest Landscape Restoration (FLR) in different biomes of the world (boreal and temperate zone, tropics and subtropics). Techniques of natural and artificial forest regeneration are discussed as well as enrichment planting, the rehabilitation of specific forestrelated ecosystems, water resource management, the restoration of landfill areas and aspects of urban forestry / greening. It is emphasized that the approaches can only be implemented successfully with the participation of the local stakeholders. FLR requires the balance of all measures on a landscape level. A special focus in the module is laid on the restoration practices of post-mining and sewage farm landscapes in Germany.
Recommended related elective modules:	
Competences:	Technical competence (50%) Methodological competence (25%) Social competence (25%)

Literature:

Ebert, H.-P. 2006. Die Behandlung von häufig vorkommenden Baumarten. (Hauptbaumarten). Schriftenreihe der Hochschule für Forstwirtschaft Rottenburg. Nr. 14. 235 S.

Fritz, P. (Hrsg.) 2006. Ökologischer Waldumbau in Deutschland. Fragen, Antworten, Perspektiven. Oekom-Verlag. 351 S.

Oesten, G. und Roeder, A. 2012. Management von Forstbetrieben, Bd. -3 ife.uni-freiburg.de.

Rittershofer, F. (1999). Waldpflege und Waldbau für Studium und Praxis. Gisela Rittershofer Verlag, Freising. 492 S.

Röhrig, E., Bartsch, N. & Von Lüpke, B. 2006. Waldbau auf ökologischer Grundlage. 7. Auflage. Verlag Eugen Ulmer Stuttgart. 479 S.

Sagl, W. 1995. Bewertung in Forstbetrieben. Parey. Berlin, Oxford, Blackwell.

Schmitthüsen, F. et al. 2009. Unternehmerisches Handeln in der Wald- und Holzwirtschaft. 2. Aufl. dbv Gernsbach.

Setzer, F., Spinner, K. 2007. Waldbesitzerhandbuch. Neumann-Neudamm.

Tzschupke, W., 1992: Die forstliche periodische Erfolgskontrolle in der Bundesrepublik Deutschland: eine Darstellung ihrer geschichtlichen und theoretischen Grundlagen sowie ihrer gegenwärtigen Praxis mit Vorschlägen für ihre Weiterentwicklung

Gadow, K. v. (Hrsg.), 2001: Risk Analysis in Forest Management. Vol 2 in der Buchserie Managing Forest Ecosystems, Kluwer Academic Publishers: 237 S.

Von Gadow, K. (2005). Analyse und Entwurf der Waldentwicklung. Universitätsdrucke im Universitätsverlag Göttingen.

Von Teuffel, K., Baumgarten, M., Hanewinkel, M., Konold, W., Sauter, U.H., Spiecker, H., von Wilpert, K. (Hrsg.) 2005. Waldumbau für eine zukunftsorientierte Waldwirtschaft. Ergebnisse aus dem Südschwarzwald.

E   Neobiota and disease complexes

Semester:	6
Module coordinator:	Prof. Dr. Jörg Schumacher (jörg.schumacher@hnee.de)
Status:	Elective module
Goal:	The participants are enabled to know the currently important, invasive and alien harmful organisms as well as serious, complex disease phenomena. They are familiar with national and international legal norms and standards as well as the specific monitoring, prevention and eradication measures of plant quarantine.
Examination form:	Work report (100%)
ECTS-Credits:	6
SWH:	4

Module component 1   Neobiota and disease complexes

Semester:	6
Coordinator:	Prof. Dr. Jörg Schumacher
Lecturer:	Prof. Dr. Jörg Schumacher
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places:	-
Teaching form:	Lecture (20), Seminar(15 h), Practical exercise (25 h), Self-study (90 h)
Language:	English
Module type:	blocked
Examination form:	Work report (100%)
Entry requirements:	-

Goal: The participants are enabled to know the currently important, invasive and alien harmful organisms as well as serious, complex disease phenomena. They are familiar with national and international legal norms and standards as well as the specific monitoring, prevention and eradication measures of plant quarantine.

Content: The sub-module alternates between seminar-based knowledge transfer and thematically linked excursions. The first part of the module deals with the problem area of invasive neobiota, which has been forced by globalisation and climate change effects. Both recently established and potentially newly emerging harmful organisms on woody plants in Europe will be discussed on the basis of the current state of knowledge and the causal framework conditions for their increase will be explored in detail. The second part of the module is dedicated to complex diseases, which are also gaining in importance and are difficult to treat. Building on previous module offerings, a synthesis of the already acquired specialist knowledge takes place with the incorporation of new findings. The course concludes with a role play on a current problem.

Recommended related elective modules:

Competences: Technical competence (50%), Methodological competence (10%), Social competence (10%), Personnel competence (10%)

Literature: Verordnung (EG) Nr. 1107/2009 des Europäischen Parlaments und des Rates vom 21. Oktober 2009 über das Inverkehrbringen von Pflanzenschutzmitteln und zur Aufhebung der Richtlinien 79/117/EWG und 91/414/EWG des Rates
PfSchG (Gesetz zum Schutz der Kulturpflanzen - Pflanzenschutzgesetz vom 6. Februar 2012, BGBl. I S. 148, 1281), zuletzt geändert durch Artikel 4 Absatz 84 des Gesetzes vom 18. Juli 2016 (BGBl. I S. 1666)
https://pflanzengesundheit.julius-kuehn.de/regelungen—ippc.html
https://www.ippc.int/en/core-activities/standards-setting/ispms/

E   Project planning and management

Semester:	6
Module coordinator:	Prof. Dr. Harald Schill (harald.schill@hnee.de)
Status:	Elective module
Goal:	The students are enabled to apply the basics of "problem solving" and learn to identify framework conditions and variants on the basis of case studies as well as to formulate target hypotheses. They are able to identify work tasks (financial planning, work planning, project proposal) and are able to define the framework conditions of their research topic. Students will be able to formulate research proposals in group work and to present their results.
	The students will apply their knowledge of plant ecology, dendrochronology, meteorology, statistics, inventory, database management, GIS, silviculture, financial planning in case studies.
Examination form:	Project report (50%), Project presentation (50%)
ECTS-Credits:	6
SWH:	4

Module component 1   Project planning and management

Semester:	6
Coordinator:	Prof. Dr. Harald Schill
Lecturer:	Prof. Dr. Harald Schill et al.
ECTS-Credits:	6
SWH:	4
Workload:	150 h / Semester
Max. study places:	-
Teaching form:	Lecture (20h), Project (40 h), Self-study (90 h)
Language:	English
Module type:	blocked
Examination form:	Project report (50%), Project presentation (50%)

Entry requirements: -

Goal: The students are enabled to apply the basics of "problem solving" and learn to identify framework conditions and variants on the basis of case studies as well as to formulate target hypotheses. They are able to identify work tasks (financial planning, work planning, project proposal) and are able to define the framework conditions of their research topic. Students will be able to formulate research proposals in group work and to present their results.
The students will apply their knowledge of plant ecology, dendrochronology, meteorology, statistics, inventory, database management, GIS, silviculture, financial planning in case studies.

Content: - Basics of problem solving
- approx. 4 case studies; objective: identification of framework conditions, formulation of target hypotheses, formulation of hierarchical "if - then" relationships; identification of variants; group work, discussion; 2 hrs.
- Identification of work tasks in the topic: work planning, financial planning, project proposal; 1 hr.
- Identification and characterization of key concepts in the working topic and definition of framework: esp. study area, tree species, drought, response; group work, discussion; 1 hr.
- Ecophysiological basics "plant water balance and photosynthesis" : lecture, 3 hrs.
- meteorological/climatological basics: lecture, 1 hr.
- Definition of drought/drought stress/drought stress indices, literature review: Discussion, group work, 4 hrs.
- Research sources of weather data, obtain data: Group work, 9 hrs.
- Processing/evaluating data; developing different methods for identifying dry years: Group work, discussion; 9 hrs.
- Selection of sample areas, incl. characterization: e.g. stand structure, stock, especially C-stock; presentation of area and sample trees: field work, discussion; 9 hrs.
- Identification of measuring methods/techniques, e.g. Scholander, Porometer, tree ring analysis: field work, own data collection: Group work, discussion; 18 hrs.
- Evaluation of weather data and tree ring data, identification of declines in growth due to drought stress; identification of tree species specific patterns; model: C storage; group work, presentation, discussion; 27 hrs.
- Formulation of revised working hypotheses, draft text for research proposal; discussion, evaluated handout; 18 hrs.
- Work planning, work flow chart, work packages on project topic, esp. personnel costs, material costs; 9 hrs.
- Completion of research proposal; group work, presentation; 9 hrs.

Recommended related elective modules:

Competences: Technical competence (30%), Methodological competence (30%), Social competence (30%), Personnel competence (10%)

Literature:

*   Examination performance is not graded (evaluation: "with success" = pass / "without success" = fail)
**   Variable exam form / according to language level (A1-A2 (K90+R) (80%+20%) / B1-B2 (K120+R) (70%+30%) / C1-C2 (K180+F20) (60%+40%)

***   Modules are offered alternatively, it is not possible to take both modules

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