

Module	Module Component	Goal	Language of instruction	Study programme	Term	blockweek or continuing module	expected calendar week/ time***	teaching form	Mandatory or elective module	Workload in credits
Faculty Forest and Environment										
Applied Programming in Forestry	Programming I	Students understand the theoretical fundamentals of computer programming and are able to create application programs of limited extent and function in a systematic way <u>using an object-oriented programming language</u>	English	MA Forest Information Technology	1.	blocked	06.01.25-24.01.25	Lecture, Practical exercise	mandatory	3
	Programming II	The students use computer programming techniques to analyze complex datasets from practical applications in environmental science and forestry. The students develop programs that handle with different data types and structures	English	MA Forest Information Technology	1.	blocked		Lecture, Practical exercise	mandatory	3
Principles of Forest Information Technology	Principles of forest data structures	Students gain fundamental knowledge about forest data structures and their spatial and digital representation. They become familiar with IT based methods and <u>techniques of relevance for forest science analysis and management</u>	English	MA Forest Information Technology	1.	blocked	07.10.24-25.10.24	Lecture, Practical exercise	mandatory	3
	Principles of GIS and Remote Sensing I	Students get an applied introduction to the use of geospatial data and technology in ecological and sustainable forest management and applied forest technology and more broadly in environmental sciences	English	MA Forest Information Technology	1.	blocked		Lecture, Practical exercise	mandatory	3
Data and Statistics in Forestry	Forestry data structures and spatial data models	Students know theoretical fundamentals of databases and are able to plan and to implement databases and to retrieve especially spatial data from databases in <u>client-server environments</u>	English	MA Forest Information Technology	1.	blocked	28.10.24-15.11.24	Lecture, Practical exercise	mandatory	3
	Environmental spatial data analysis	The students perform statistical analyses of environmental spatial data. They know the advantages and disadvantages of different sampling strategies and monitoring concepts. Students are able to select appropriate statistical procedures and tests to find structures and relations in the data and to justify statements	English	MA Forest Information Technology	1.	blocked		Lecture, Practical exercise	mandatory	3
Forest inventory and tree monitoring	Principles of forest inventories	Students know principal methods and concepts of inventories at different spatial scales and collect comprehensive information about the state and dynamics of <u>forests for strategic and management planning</u>	English	MA Forest Information Technology	1.	blocked	02.12.24 – 13.12.24	Lecture, Practical exercise	elective	3
	Examples of forest monitoring at tree- and stand level	Students gain an understanding of basic principles of tree growth and physiology in relation to changing environmental conditions. Based on this, outcomes of state-of-the-art forest monitoring systems are used to assess forest productivity, carbon budgets, and forest resilience to changing environmental conditions.	English	MA Forest Information Technology	1.	blocked		Lecture, Practical exercise	elective	3
	Relevance of FIT for forest conservation & management	Students critically evaluate the relevance of long-term inventory and monitoring for decision making in forestry and environmental sciences	English	MA Forest Information Technology	1.	blocked		Lecture, Practical exercise	elective	3
Approaches and tools for research and monitoring with geodata remote sensing	geodata and remote sensing as tools for spatial monitoring	Familiarize the students with the fundamental theoretical ideas and practical concepts for a long term monitoring framework in protected areas using geospatial data and remote sensing products	English	MA Forest Information Technology	1.	blocked	18.11.24 – 29.11.24	Lecture, Practical exercise	elective	3
	Basics in monitoring and research	Presentation of the theoretical principles of quantitative research as well as spatial research and monitoring methods. Practical examples of application from research, monitoring and evaluation in the context of international protected areas. Inter- and transdisciplinary methods of knowledge management will be presented as well as innovative, digital methods of citizen science and communication via social media. Students learn the methods of empirical social research as well as scaled spatial analysis from the perspective of different <u>actors in the context of protected areas</u>	English	MA Forest Information Technology	1.	blocked		Lecture	elective	3
Fundamentals of	sensors of automated measurements	The students identify and describe the measuring principles behind sensor technologies used as data sources for environmental modelling. They know the principles of data quality assessment and further data processing procedures that guarantee a meaningful re-use of the measured data.	English	MA Forest Information Technology & MA Global Change Management & MA Forest	1.	blocked		Lecture, Practical exercise	elective	3

measurements and modelling	process modelling methodology	The students know about application areas of ecosystem models and are able to distinguish between different modelling concepts.	English	MA Forest Information Technology & MA Global Change Management & MA Forest System	1.	blocked	21.10.24-15.11.24	Lecture, Practical exercise	elective	3
Innovative forest management methods	Innovative concepts and technology trends in forest management	Students get to know innovative concepts and technologies related to forest management and wood logistics and learn how to apply them in practice.	English	MA Forest Information Technology	3.	blocked	21.10.24 – 01.11.24	Lecture, Seminar, Practical exercise	elective	3
Advanced Remote Sensing innovations (ARSI)	Remote sensing change detection principles	Students are enabled to use remote sensing and geographic information system in different applications related to forest protection and forest change detection.	English	MA Forest Information Technology	3.	blocked	23.09.24-04.10.24	Lecture, Seminar	elective	4
Academic writing and presenting	academic writing and presenting	Students know the fundamentals of effective scientific writing and oral presenting.	English	MA Global Change Management & MA Forest Information Technology	1.	blocked	02.12.24 – 13.12.24	Seminar	elective	3
Fundamentals of systems functionality and change	Fundamentals of systems functionality and change	Students are enabled to understand emergent properties and unpredictable dynamics of complex systems (including both natural and social systems and their interactions) and the key attributes required for sustainable functioning. They can conduct exemplary analyses of selected systems' components and functionality and critically	English	MA Global Change Management	1.	blocked	21.10.24-15.11.24	Lecture, Seminar, Project	mandatory	9
Drivers of stress to system functionaity and root causes	Drivers of stress to systems functionality	Students will be enabled to systemically understand and analyse human activities ("drivers of stress") that directly lead to stresses on biological and social systems.	English	MA Global Change Management	1.	blocked	16.12.24-20.12.24 & 06.01.25-24.01.25	Lecture, Seminar, Practical exercise	mandatory	2
Rethinking environmental economics I	Introduction to resource uses and economic concepts	Students have a solid understanding of concepts and methods of environmental, ecological and natural resource economics. They are familiar with the dynamics of economic systems, functioning of markets, reasons for market failures and potential solutions. They are able to discuss the relevancy of these concepts for sustainable forest management and to optimise the use of forest resources, being aware of their	English	MA Forestry System Transformation	1.	blocked	07.10.24-25.10.24	Lecture, Seminar, Practical exercise	mandatory	3
	Human wellbeing, ecosystem functions, services and valuation approaches	Students are enabled to understanding the ecosystem services concept, its background and rationales, as well as the current state of scientific research and policy. They are familiar with definitions, typologies, and frameworks that link ES to wellbeing, and with recent socio-political and scientific debates for mapping, indicators & valuation. Based on case study examples, they can analyse chances and challenges of the ES concept and distinct valuation approaches for political and economic decision-making, know about the challenges to communicate to the science-policy/practice interface, and are able to develop strategies for overcoming them. Students gain knowledge about a wide spectrum of forest management systems for ecosystem service provision. They are familiar with existing and potential future societal demands concerning forestry systems and understand how these change over time. They have a good understanding of forest management approaches and their influences on different kinds of ecosystem services. They are enabled to suggest and debate organisational, procedural, and institutional adjustment needs and potentials	English	MA Forestry System Transformation	1.	blocked		Lecture, Seminar, Practical exercise	mandatory	3
	Forest management systems for ecosystem services	Students gain knowledge about a wide spectrum of forest management systems for ecosystem service provision. They are familiar with existing and potential future societal demands concerning forestry systems and understand how these change over time. They have a good understanding of forest management approaches and their influences on different kinds of ecosystem services. They are enabled to suggest and debate organisational, procedural, and institutional adjustment needs and potentials	English	MA Forestry System Transformation	1.	blocked		Lecture, Practical exercise, Project	mandatory	3

Future management systems I	Silvicultural management based on growth modelling for decision support	Students are enabled to guide structured goal-setting processes and to define operational realizable and measurable goals. By means of selected case studies (forestry enterprises of different types of ownership) and self-defined target hierarchies the influence of different silvicultural strategies and management decisions can be quantified on the basis of forest growth model calculations. The students are able to apply growth models and software with integrated GIS components and to evaluate and map the results of different mid-term scenario simulations. Students are enabled to weight the results of different target and management strategies by applying decision support systems. They are able to identify potentials and processes for the optimization of target hierarchies and to implement silvicultural control processes in the sense of adaptive management.	English	MA Forestry System Transformation	1.	blocked	28.10.24-15.11.24	Lecture, Practical exercise, Project	mandatory	3
Forest governance and policy I	Concepts, institutions and actors	Students understand, can explain and analyse environmental governance systems. Rooted in a new institutional economics and political sciences understanding, students can distinguish between governance structures, institutions, actors and organisations. In particular they are familiar with key policy and governance concepts relevant for sustainable natural resources management and use. Besides the deepening of dedicated governance systems students are able to explain and handle multiple	English	MA Forestry System Transformation	1.	blocked	06.01.25-24.01.25	Lecture, Seminar, Project	mandatory	3
	Environmental policy and nature conservation	Students are familiar with the general objectives, tools and current debates of environmental-, nature- and biodiversity conservation policy on different levels. They know the basic environmental governance structures, and the different policy instruments at stake to manage environmental problems. They are able to discuss the chances and limitations of these policy approaches in a nuanced way. For dedicated environmental policy arenas, students can analyse central actors, inherent problem perceptions and ideas for policy solutions. They are able to analyze participatory governance in different policy fields.	English	MA Forestry System Transformation	1.	blocked		Lecture, Seminar, Project	mandatory	3
Project management and communication	project design and management	The module component helps students to plan their own transformation project of moderate size related to the study program's content. It takes them step by step from the first idea to a detailed project concept. Students acquire further skills in interdisciplinary scientific work and self-management	English	MA Forestry System Transformation	3.	blocked	02.12.24 – 13.12.24	seminar, project	mandatory	3
	communication and dissemination	Students get to know strategies for scientific communication, moderation and marketing. They are able to communicate results to expert and lay audience and get to know a range of dissemination strategies and media.	English	MA Forestry System Transformation	3.	blocked		seminar, project	mandatory	3
Applied silviculture, ecosystem restoration and forest inventory	Applied silviculture and ecosystem development and restoration	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.	English	BA International Forest ecosystem management	3.	blocked	tba	lecture, practical exercise	mandatory	4