

Curriculum and Module Description
International Master Study Programme **Forest Information Technology (M.Sc.)**
(effective from WS 2015/16)

Semester	Status	Module	Module Component	SWH	Teaching Form	Teaching Language	Examination Form	Credits	Module coordinator / Lecturer
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Mandatory modules (offered at Eberswalde University for Sustainable Development (HNEE))

1	M	Geomatics I	Geographic Information Systems I (Fundamentals of Geographic Information Systems) Goal: Students know theoretical fundamentals of Geographic Information Systems (GIS) and are enabled to use GIS for various purposes of natural resources management.	2	L, S, PE	E	WE (100%)	3	Mund
			Database Management Goal: Students know theoretical fundamentals of databases and are able to plan and to implement databases and to retrieve especially spatial data from databases in client-server environments.	2	L, S, PE	E		3	Schultz
1	M	Data Analysis & Management I	Programming I Goal: Students understand the theoretical fundamentals of computer programming and are able to create application programs of limited extent and function in a systematic way using an object-oriented programming language.	2	L, PE	E	PR (100%)	3	Schultz
			Statistics I Goal: Students know selected descriptive and analytical statistical methods and are enabled to accomplish environmental data analyses.	2	L, PE	E		3	Schultz
1	M	Geomatics II	Geographic Information Systems II (Digital Cartography) Goal: Students are familiar with basic of digital cartography and are enabled to store, edit and present spatial data using standard GIS software.	2	L, S, PE	E	PR (100%)	3	Mund
			Remote Sensing Goal: Students know theoretical fundamentals and are enabled to use remote sensing as one of forest and environment monitoring tools.	2	L, S, PE	E		3	Mund

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Elective modules (offered at Eberswalde University for Sustainable Development (HNEE))

1	E	Technological Fundamentals	Computer Science & Technology Goal: Students know topical fundamentals of computer science and technology including current computer hardware and possess practical skills using different computer environments and operating systems.	2	L, PE	E	TD (100%)	3	<u>Schultz</u>
			Automated Data Collection Goal: Students know principles and technological solutions of automated data collection, have an overview of devices applied in forestry and environment, and have practical experience with selected devices	2	L, S, PE	E		3	Mund, Dietterle, Cremer, Persicke
1	E	Scientific Research & Organization	Project Planning & Management Goal: Students know the methods and are enabled to put practically into action project planning; they have especially knowledge of research project proposals	2	L, S, PE	E	PR (50%)	3	<u>Welp</u>
			Scientific Writing & Presenting Goal: Students know the fundamentals of effective scientific writing and oral presenting.	2	L, S, PE	E		3	Welp, Schultz
1	E	Landscape Analysis & Prediction	Ecosystem Modelling Goal: Students have a principal understanding of notion and approaches of ecosystem modelling and have basic practical skills to plan, develop and apply models of ecosystem related target areas.	2	L, PE	E	TD (100%)	3	<u>Schultz</u> , Dietterle
			Landscape Systems Analysis Goal: Students are enabled to understand concepts, principles and methods of landscape systems analysis and are trained to select and to apply different quantitative methods of landscape systems analysis for varying targets.	2	L, PE	E		3	Schultz, Lutze

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1	E	German Language & Culture	German Culture & Language Goal: Students know the fundamentals of the current German society and are able to apply German language in everyday situations.	2	L, PE	E	TD (100%)	3	Language Centre of University
1	E	Special Module I (Current Technologies and Applications)	Special Module I (Current Technologies and Applications) Goal: Students become acquainted with current developments of IT and their applications in forestry and environment related areas (e.g. Web Mapping, new open source developments, ...)	2	tbd	E	tbd	3	tbd

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Mandatory modules (offered at Warsaw University of Life Sciences (SGGW))

2	M	Geomatics III	Geographic Information Systems III (Advanced Geographic Information Systems) Goal: Students are enabled to apply advanced GIS technologies and are especially introduced to the use of GIS and GPS in solving of various forestry-related problems.	2	L, S, PE, P	E	PR (50%)	3	<u>Będkowski</u> , Brach
			Forest Photogrammetry Goal: The main objective of the course is to introduce the use of Photogrammetry and other related tools in solving of various forestry-related problems.	2	L, S, PE, P	E	WE (50%)	3	<u>Będkowski</u> , Janeczko
2	M	Data Analysis & Management II	Statistics II Goal: The main objective of the course is to introduce the use of the statistical programming environment for practical statistical problem solving.	2	L, S, PE	E	WE 50%),	3	Zasada
			Programming II Goal: Students are able to develop application programs of increased extend using the object oriented programming approach.	2	S, PE, P	E	PR (50%)	3	Tracz
2	M	Operational Forestry I	Close to Nature Silviculture & Nature Conservation Goal: The objective of this module is to develop an understanding of major principles of close-to-nature silviculture determining its role in the sustainable forest resource management and multifunctional forestry	2	L, S	E	WE (40%)	2	Brzeziecki, <u>Bielak</u>
			Forest technology & engineering Goal: Students are able to sustainably manage forest resources by using new technologies, optimization and planning techniques.	2	L, PE, P	E	WR (30%)	2	Nowacka, <u>Moskalik</u>
			Forest utilization Goal: Students are able to recognize wood of the most important European tree species. Further they gain knowledge about wood properties, wood processing, industry and forest resources.	2	L, S, PE, P	E	WE (30%)	2	<u>Jednoralski</u> , Moskalik

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2	E	Outdoor Recreation Impact on Environment	Outdoor Recreation Impact on Environment Goal: Students are able to analyse the influence of the outdoor recreation to forests and environment, and of interactions between processes and external influences for practical purposes.	3	L, S, PE	E	WR (100%)	4	Skłodowski
2	E	Sustainable Forest Management B	Sustainable Forest Management Goal: Students are able to use various sources of information and different techniques to prepare management plans and are able to analyze the impact of various management scenarios on forest structure.	3	L, S, PE, P	E	TD (100%)	4	Miścicki
2	E	Digital Processing of Remotely Sensed Data	Digital Processing of Remotely Sensed Data Goal: The main objective of the course is to provide students with the ability of processing remotely sensed data for forestry and environmental purposes.	3	L, S, PE	E	PR (100%)	4	Będkowski
2	E	Polish Culture and Language	Polish Culture and Language Goal: Students know the fundamentals of the current Polish society and are able to apply Polish language in everyday situations.	3	L, S	E	TD (100%)	4	N.N.
2	E	Fauna Monitoring Methods	Fauna Monitoring Methods Goal: Students know theoretical fundamentals and practical approaches to collect and analyze fauna data	3	L, S	E	WR (100%)	4	Skłodowski
2	E	Forest Information Systems	Forest Information Systems Goal: The main objective of the course is to introduce students to a wide range of topics in nowadays forest ecosystem management, information systems architecture and their use in forest ecosystems management. Students will know the utility of various information systems for forestry data analyses and will be able to apply them for solving problems related to forestry and natural environment.	3	S, PE, P	E	PR (100%)	4	Tracz

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2	E	Spatial Analysis	Spatial Analysis Goal: Students are introduced to a wide range of topics regarding spatial analyses and are able to choose adequate analysis approaches, to successfully process and to analyze spatial data and information about environmental objects and processes.	3	S, PE	E	PP (100%)	4	Tracz
2	E	Map editing	Map editing Goal: Students have advanced skills in map editing. They are able to organize, process and combine spatial data in various formats and coordinate systems and to present final results following cartographic standards.	3	L, S, PE	E	PP (100%)	4	Brach
2	E	Biomass Assessment & Modelling	Biomass Assessment & Modelling Goal: Students are introduced to various chapters around the prediction, evaluation and logistics of forest biomass.	3	L, S, PE	E	PR (100%)	4	Bijak
2	E	Special Module II (Current Technologies and Applications)	Special Module II (Current Technologies and Applications) Goal: Students become acquainted with current developments of IT and their applications in forestry and environment related areas.	3	tbd	E	tbd	4	

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3	M	Research Project	Practical Research Project Goal: Students are enabled to plan and to accomplish a research project of moderate size and have consolidated their graduate profession empowering.		P		PR (75%)	12	<u>Schultz</u> (EW), <u>Zasada</u> (WAR)
			Scientific Internet Colloquium Goal: Students are able to open new areas of IT applications, extend and manifest abilities for accomplishing scientific work incl. writing and reviewing scientific papers.	3	S	E	TP (25%)	4	<u>Schultz</u> , <u>Zasada</u>
3	M	Operational Forestry II	Forest Economics Goal: Students will be able to economically validate various aspects of forest management	2	L, PE,P	E	WR (50%)	3	<u>Płotkowski</u> , <u>Janeczko</u> , <u>Gruchała</u>
			Forest policy Goal: Students understand the policy determinants of the contemporary forestry and can apply fundamentals of modern Forest policy in practice.	2	L, S, P	E	PP (50%)	3	<u>Płotkowski</u> , <u>Janeczko</u> , <u>Paschalis-Jakubowicz</u>

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3	E	Advanced Remote Sensing & Forest Change Detection	Advanced Remote Sensing & Forest Change Detection Goal: Students are enabled to use remote sensing and geographic information system in different applications related to forest protection and forest change detection	3	L, S	E	PR (100%)	4	Mund
3	E	Programming III	Programming III Goal: Students are enabled to use methods of object oriented programming with ArcObjects, Visual Basic and Visual Basic for Applications, to extend ArcGIS Desktop applications and to programmatically access Database systems.	3	L, S, P	E	WR (100%)	4	Creutziger
3	E	Forest Decision Support Systems	Forest Decision Support Systems Goal: Students know the growth dynamics of trees and forest stands and are able to use various growth models and Forest Decision Support Systems to derive and support decisions.	3	L, S	E	PR (100%)	4	Guericke
3	E	Collection and Analysis of LiDAR data	Collection & Analysis of LiDAR data Goal: Students are familiar with the technological principles of LiDAR approaches and are able to pre-process and analyze LiDAR data and to display and communicate related results	3	L, S, P	E	PR (100%)	4	Mund (HNEE), tbd (SGGW)
3	E	Special Module IIIe (Current Technologies and Applications)	Special Module IIIe (Current Technologies and Applications) Goal: Students become acquainted with current developments of IT and their applications in forestry and environment related areas.	3	tbd	E	tbd	4	tbd

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Elective modules (offered Warsaw University of Life Sciences (SGGW))

3	E	Internet Programming	Internet Programming Goal: Students know the potentials of the Internet as source and target of various forest and environmental information and are able to develop static and dynamic websites.	3	S, PE, P	E	PR (100%)	4	Zasada, <u>Tomusiak</u>
3	E	Non-Wood Forest Products and Services	Non-Wood Forest Products and Services Goal: The main objective of the course is to present forest as a source of various non-wood forest products and services, as well as problems of estimation of non-wood forest resources, its utilization, market and law instruments.	3	L, PE	E	WR (50%), WE (50%)	4	Staniszewski
3	E	Forest Biometry	Forest Biometry Goal: The main objective of the course is to introduce theoretical foundations of forest measurements and forest data collection, use of principles and techniques for evaluating and monitoring forest growth and yield in various methods.	3	L, S,P	E	PR (50%), TD (50%)	4	Tomusiak
3	E	Administration & Management in Forestry	Administration & Management in Forestry Goal: The objective of the course is to develop knowledge about specific forest management processes and to reflect their importance for the competitive position and growth of forest businesses. After the course, students should know how to use some analytical tools helpful in solving economic problems in forestry.	3	L, PE,P	E	WR (100%)	4	Janeczko
3	E	Tree ring analysis	Tree ring analysis Goal: Students are able to conduct research based on tree-ring data and have an extended understanding of past responses of tree growth to environmental variability and prediction of forest responses to change of environment in the future.	3	S, PE	E	WE (60%) PR (40%)	4	Tomusiak
3	E	Special Module IIIw (Current Technologies and Applications)	Special Module IIIw (Current Technologies and Applications) Goal: Students become acquainted with current developments of IT and their applications in forestry and environment related areas.	3	tbd	E	tbd	4	tbd

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4	M	Master thesis & defence	Master thesis Goal: Students obtain own research results while solving an IT application related design or discussing a scientific problem.			E	PR (50%), PP (25%), TD (25%)	20	Schultz (EW), Zasada (WAR)
			Defence Goal: Students present individual research results as academic personalities.			E			
4	M	Student Research Colloquium	Student Research Colloquium Goal: Students extend and strengthen abilities to carry out scientific work and develop and manifest skills to evaluate and communicate results of this work.	3	S	E	PP (100%)	4	Schultz (EW), Zasada (WAR)

Elective modules (offered at Eberswalde University for Sustainable Development (HNEE))

4	E	Environmental Data Analysis	Environmental Data Analysis Goal: Students know theoretical fundamentals of analyzing non-spatial and spatial environmental data and are able to pre-process, compile and analyze large structured and unstructured environmental data sets for different targets. Students are able to apply related software for data analysis and visualization.	4	L, S, PE	E	PR (100%)	6	Schultz
4	E	Web Databases	Web Databases Goal: Students know the theoretical fundamentals and possess practical skills to plan and implement databases with a special focus on the Web and Web technologies.	4	L, S, PE	E	PR (100%)	6	Schultz
4	E	Applied Remote Sensing Innovations	Applied Remote Sensing Innovations Goal: Students know about current Remote Sensing innovations and are enabled to use Remote Sensing and Geographic Information Systems for various purposes in different applications related to phenomena observed on global scale.	4	L, S	E	PR (100%)	6	Mund
4	E	Special Module IVe (Current Technologies and Applications)	Special Module IVe (Current Technologies and Applications) Goal: Students become acquainted with current developments of IT and their applications in forestry and environment related areas.	4	L, S, PE	E	tbd	6	tbd

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4	E	Environmental Monitoring	Environmental Monitoring Goal: Students are able to select main fields and apply possible practical application of remote sensing techniques with a landscape ecological approach.	4	L, S, PE	E	TD (100%)	6	Tracz
4	E	Forest Inventory & Modelling	Forest Inventory & Modelling Goal: Students are able to apply deepened knowledge of the statistical fundamentals of forest inventory for planning and evaluating inventories and are able to apply model based approaches.	4	L, S, PE	E	WE (50%), PR (50%)	6	Zasada
4	E	Special Module IVw (Current Technologies and Applications)	Special Module IVw (Current Technologies and Applications) Goal: Students become acquainted with current developments of IT and their applications in forestry and environment related areas.	4	L, S, PE	E	tbd	6	tbd

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