

## OFFICIAL TRANSLATION OF

### **Fachspezifische Bestimmungen für den Studiengang „Wood Science (M.Sc.)“**

Vom 16. Februar 2022

**(Amtliche Bekanntmachung Nr. 78 vom 15. August 2022)**

**THIS TRANSLATION IS FOR INFORMATION ONLY –  
ONLY THE GERMAN VERSION SHALL BE LEGALLY  
VALID AND ENFORCEABLE!**

### **Subject-Specific Provisions for the Master of Science in Wood Science (MSc)**

**dated 16 February 2022**

In its session held on 16 May 2022, the Executive University Board, in accordance with Section 108 subsection 1 of the Hamburg higher education act (Hamburgisches Hochschulgesetz, HmbHG), dated 18 July 2001 (HmbGVBl. p. 171) and last amended 17 June 2021 (HmbGVBl. page 468), ratified the Subject-Specific Provisions of the Masters of Science in Wood Science adopted by the Faculty of Mathematics, Informatics and Natural Sciences in accordance with Section 91 subsection 2 no.1 HmbHG.

#### **Preamble**

These subject-specific provisions supplement the provisions of the Faculty of Mathematics, Informatics and Natural Sciences' Examination Regulations dated 20 October 2021 as amended governing master of science degree programs.

#### **Section 1**

**Program and examination objectives, academic degree, and implementation of the degree program**

##### **Section 1 subsection 1:**

The consecutive Master of Science in Wood Science is a research-oriented, international degree program taught in English. Students use theoretical skills and practical research experience to develop and refine wood science topics. They combine

fundamental forestry and environmental issues with the use of wood and wood-based materials and their effect on society. Students are also able to demonstrate the optimal use of lignocellulosic materials in various fields of application based on scientific, technological, and economic knowledge. Students are able to combine interdisciplinary issues and assess the effects of possible solutions. They acquire practical experience in conducting research projects and obtain professional qualifications and social skills.

**Section 3  
Subject advising**

**Section 3 subsection 4:**

Students must consult with the module coordinator for subject advising before registering to retake a final module examination a third time, whereby a decision is made as to whether module courses should be repeated.

**Section 4  
Program and examination organization, modules, and ECTS credits**

**Section 4 subsection 1:**

Module No.	Module Name	ECTS Credits	Semester
<b>Required Modules</b>			
MWS01	Characteristics and Grading of Wood	6	1
MWS19	Biogeochemistry: An Analysis of Global Elemental Cycles	6	1
MWS03	Project Management	6	1
MWS04	Fibers and Fiber-Based Products	6	1
Fund	Fundamentals of Management	6	1
<b>Required elective modules</b>			
MWS05	Wood Molecular Biology and Biotechnology	6	2 or 3
MWS06	Wood Degradation and Protection	6	2 or 3
MWS07	Wood Physiology and Biochemistry	6	2 or 3
MWS08	Paper and Board Technology	6	2 or 3
MWS09	Lignocellulose Biorefinery	6	2 or 3

MWS10	Biopolymers	6	2 or 3
MWS11	Solid Wood Technology	6	2 or 3
MWS12	Composite Technology	6	2 or 3
MWS13	Structural Applications of Wood	6	2 or 3
MWS17	Project Study	6	2 or 3
<b>Final Module</b>			
MWS-AB	Master's Thesis	30	4

		ECTS Credits																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Semester	1	Characteristics and Grading of Wood					Bio geochemistry: An Analysis of Global Elemental Cycles						Project Management						Fibers and Fiber-Based Products						Fundamentals of Management						
	2						Required elective modules																		Elective modules						
	3																														
	4												Master's Thesis																		

The description of all modules can be found in the table located in the Annex to the Subject-Specific Provisions for the Master of Science in Wood Science—Module Table. A detailed description of the modules can be found in the module catalog for the degree program.

**Section 4 subsection 3:**

The final module is comprised of the master's thesis and an oral examination. The oral examination should be taken no later than six weeks after submission of the master's thesis.

**Section 5**  
**Course types**

**Section 5 subsection 2**

Attendance is mandatory for practical courses, field trips, laboratory work, and project work. Courses are held in English. Any deviations will be announced at the beginning of the course.

**Section 13**  
**Completed coursework and module examinations**

**Section 13 subsection 6:**

The examinations are held in English.

**Section 14**  
**Master's thesis**

**Section 14 subsection 4:**

The master's thesis must be written in English. The examinations board may allow an exception in justified cases.

**Section 14 subsection 5:**

An application to commence work on the master's thesis may be submitted once at least 72 ECTS credits in the degree program have been earned and all required modules have been successfully completed.

The work required in the final module amounts to 30 ECTS credits, which is comprised of a master's thesis (27 ECTS credits) and an oral examination (3 ECTS credits). The time period to complete the work is six months. The oral examination should be taken no later than six weeks after submission of the master's thesis.

**Section 15**  
**Evaluation of examinations**

Elective subjects (12 ECTS credits) are subject to the rules and regulations of the selected modules. The elective area and the Project Management module will not be used to calculate the overall final grade. The overall final grade is calculated as an average of module grades weighted according to ECTS credits.

**Section 23**  
**Effective date**

These subject-specific provisions become effective on the day following official publication by Universität Hamburg. They first apply to students commencing their studies in Winter Semester 2022/23.

Hamburg, 18 August 2022  
**Universität Hamburg**

Annex to the Subject-Specific Provisions for the Master of Science in Wood Science—Module Table													
						Courses				Examinations			
Semester Offered	Recommended Semester	Duration (in Semesters)	Module Type: Required (Req), Required Elective (RE), or Elective (E)	Admission Requirements	Module Number/Code	Module	Course Title	Course Type	Credit Hrs. per Week	Prerequisites for Admission to Examination	Type of Examination	Graded	ECTS Credits
Winter semester	1	1	Req	None	MWS01	<b>Characteristics and Grading of Wood</b>					<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Wood Characteristics, Grading and Implications for Use	L	1					
						Case Studies and Field Trips on Grading of Wood	S	1					
						Grading of Sawn Wood	L	1					
						Laboratory Visual and Mechanical Grading Methods	S	1					
<b>Intended learning results:</b> Students learn about relationships of wood properties and the criteria for quality (round timber, sawn timber, and wood products) and are able to verify changes and application options.													
Winter semester	1	1	Req	None	MWS19	<b>Biogeochemistry: An Analysis of Global Elemental Cycles</b>					<b>Examination (graded, 100%), report (pass/fail)</b>	<b>Yes</b>	<b>6</b>
						Biogeochemistry: An Analysis of Global Elemental Cycles	L	2					
						Global Change Ecology	S, Lab	2					

**Intended learning results:** Students know the most important layers of the earth: the atmosphere, biosphere, pedosphere, and lithosphere. They understand the significance of global elementary cycles that determined the biomass and primary production of terrestrial and marine ecosystems. Students are able to evaluate the most recent changes in global biochemistry caused by human activity.

Winter semester	1	1	Req	None	MWS03	Project Management				Conclusion of the project	No	6
						Theory of Project Management	L	1				
						Seminar Project Exercises	S	2				
						Field trips	E	1				

**Intended learning results:** Students learn how to plan and carry out projects. They carry out their own projects as a team and take a field trip. They are familiar with time and cost management methods and are able to work on projects involving different social groups.

Winter semester	1	1	Req	None	MWS-Fund	Fundamentals of Management				Oral or written examination	Yes	6
						Required elective course	L	2				
						Required elective course	PC	1				
						Generally, the module is comprised of the following required elective courses each with 6 ECTS credits, which are offered regularly: Introduction to CSR International Strategic Management International Organizations Management Accounting and Control International Market Strategies Finance and Investment Sustainability and Management Students must successfully complete one required elective course.						

**Intended learning results:** The aim of the module is to familiarize students with management and sustainability issues in an entrepreneurial context. Students are able to theoretically and practically understand central management issues and to independently work and critically reflect on these issues. Furthermore, students are familiar with the challenges and problems of sustainable management, which enables them to understand the business and economic relationships in detail and to work and critically reflect on the resulting conflicts of objectives of organizations.

Summer or winter semester	2 or 3	1	RE	None	<b>MWS05</b>	<b>Wood Molecular Biology and Biotechnology</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Wood Molecular Biology and Biotechnology	L	2				
						Wood Molecular Biology and Biotechnology	Lab	2				

**Intended learning results:** Students possess sound knowledge of the importance of molecular and biotechnological methods in the wood sciences. They are able to successfully apply methods to account for and establish proof of legality for the movement of timber. Students have acquired genetic engineering skills for the production and creation of enhanced wood for optimal use.

Summer or winter semester	2 or 3	1	RE	None	<b>MWS06</b>	<b>Wood Degradation and Protection</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Wood Degradation and Protection	L	2				
						Wood Degradation and Protection	Lab	2				

**Intended learning results:** Students learn modern methods of wood biology, which enables them to critically consider issues about wood damage and preservation and to develop suitable propositions for solutions.

Summer or winter semester	2 or 3	1	RE	None	<b>MWS07</b>	<b>Wood Physiology and Biochemistry</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Wood Physiology and Biochemistry	L	2				
						Wood Physiology and Biochemistry	Lab	2				

**Intended learning results:** Students acquire sound knowledge of wood physiological and wood biochemical metabolic processes with a particular focus on wood and heartwood formation. They learn about modern wood-biological research and examination methods on functional genomics, proteomics, or metabolomics.

Summer or winter semester	2 or 3	1	RE	None	<b>MWS08</b>	<b>Paper and Board Technology</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Paper and Board Technology	L	2				
						Development of Paper and Board Production	Lab	2				
<p><b>Intended learning results:</b> Students have a solid understanding of the various production processes and products of the paper and cardboard industry. They learn the differences between the technologies used for graphic paper, tissue paper, specialty paper, cardboard, and corrugated paperboard. Students also learn about and understand the significance of recycled paper as a fibrous raw material and the recycling techniques used for various finished products.</p>												
Summer or winter semester	2 or 3	1	RE	None	<b>MWS09</b>	<b>Lignocellulose Biorefinery</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Lignocellulose Biorefineries	L	3				
						Lignocellulose Biorefineries	Lab	1				
<p><b>Intended learning results:</b> Students acquire in-depth knowledge about the conversion of lignocellulosic raw materials—such as wood, straw, and bagasse—into liquid energy sources and commodity chemicals. This knowledge includes thermochemical conversion processes and technologies based on pretreatment and enzymatic hydrolysis for the production of fermentable sugars and lignin. Students have also gained an understanding of the economic and ecological aspects of biorefinery processes.</p>												
Summer or winter semester	2 or 3	1	RE	None	<b>MWS10</b>	<b>Biopolymers</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Biopolymers from Lignocellulosics	L	3				
						Biopolymers from Lignocellulosics	Pr	1				
<p><b>Intended learning results:</b> Students have a solid understanding of the extraction of wood components for the production of high-quality polymers and polymer derivatives. Students learn about the processes of isolation and purification based on the chemical properties of the wood components. The course covers different strategies for the derivatization of polymers and for the production of new materials and substances. The problems arising from the distinctiveness of bio-based raw materials is an important aspect of this.</p>												



Summer or winter semester	2 or 3	1	RE	None	<b>MWS11</b>	<b>Solid Wood Technology</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Solid Wood Technology	L	2				
						Solid Wood Technology	Lab	2				
<b>Intended learning results:</b> Students learn the detailed processing methods for solid wood. They are able to evaluate the relationships between processing, conditions of use, and product performance.												
Summer or winter semester	2 or 3	1	RE	None	<b>MWS12</b>	<b>Composite Technology</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Composite Technology	L	2				
						Composite Technology	Lab	2				
<b>Intended learning results:</b> Students learn about the special topics of composites made from renewable raw materials. They create their own materials, which they themselves produce, test, and evaluate.												
Summer or winter semester	2 or 3	1	RE	None	<b>MWS13</b>	<b>Structural Application of Wood</b>				<b>Oral or written examination</b>	<b>Yes</b>	<b>6</b>
						Structural Application of Wood	L	2				
						Structural Application of Wood	Lab	2				
<b>Intended learning results:</b> Students learn about requirements for building materials and are familiar with the most important European rules and regulations. They learn basic regulatory building codes. Students are able to characterize the effects that using timber and wood composites in load-bearing structures have. They are able to perform simple calculations, for example, regarding the moisture and thermal behavior of building components.												
Summer or winter semester	2 or 3	1	RE	None	<b>MWS17</b>	<b>Project Study</b>				<b>Conclusion of the project</b>	<b>Yes</b>	<b>6</b>
						Project	Pr	6				

<b>Intended learning results:</b> Students work on a scientific topic theoretically and/or experimentally. They are in a position to be able to evaluate their results in an interdisciplinary manner.												
Summer or winter semester	2 or 3	1	E	Depends on module		<b>Elective Area Modules</b>				Depends on module	Yes/no	Σ 12
						Depends on module						
Intended learning results: depends on module												
Summer semester	4	1	Req	72 ECTS credits and the successful completion of the required modules	<b>MWS-AB</b>	<b>Final Module</b>				Written thesis (90 %), oral examination (10 %)	Yes	30
						Master's thesis						
<b>Intended learning results:</b> The commencement of independent scholarly work, exemplary immersion into a subfield of wood science, knowledge of the rules of good scientific practice, and knowledge of important publications and theories from this area of specialization.												

Key:

L= Lecture

S = Seminar

PC = Practical Course

Pr = Project

Lab = Laborpraktika