

## Master's Degree Programme in Wood Materials Science 2021-2022

### Description of the programme

Master's Degree Programme in Wood Materials Science (WMS) focuses on the links between the characters of woody biomass and the properties of wood-based products, which include materials, chemicals, and energy derived from wood and its different fractions. During the programme, the students will get an overall picture on production, sourcing and valorization of woody biomass, biorefining techniques, biomass conversion processes, material flows, and innovative uses of wood and the value generation schemes in the bio-based economy. After graduation, the students have competence to work as professionals in different areas of bio-based industries and the energy cluster. The specific competences of the graduates include:

- Knowledge on different properties and sustainable production of woody biomass, and its adequacy and end-uses on local and global levels.
- Skills for RDI tasks in bio-based industries
- Broad understanding of material sciences and relevant conversion technologies

The curriculum of the MSc Wood Materials Science consists of 120 ECTS and the duration of the studies is two academic years of full-time studies. The medium of instruction and language for written reports and examinations is English.

The programme constitutes of compulsory and elective studies. In addition to providing an overview on wood as material and its use in bio-based products, compulsory studies include academic skills and innovation management. Weighing towards the second academic year, students can choose from a selection of courses to deepen their knowledge in one or more areas of interest under following topics: Forest Biomass Production and Properties; Biorefining and wood-based products; and Bioeconomy and sustainability. Additionally, students may choose selected courses in Karelia and Savonia Universities of Applied Sciences.

Siirtymäsäännöt lukuvuonna 2021-22 ennen syksyä 2021 aloittaneille opiskelijoille.

- Ennen syksyä 2021 opintonsa aloittaneella on oikeus suorittaa tutkintonsa hyväksytyh hopsinsa mukaisesti soveltaen kuitenkin näitä siirtymäsäännöksiä. Päivitä hopsisi ohjaavan opettajasi tai suunnittelijan avustuksella. Epäselvissä tapauksissa ole yhteydessä moduulin/kurssin vastuopettajaan tai oppiaineen vastuuhenkilöön. Sovitut muutokset on kirjattava näkyviin hopsiin opettajan kommentein.
- Tarjonnasta poistuneiden tai laajuudeltaan muuttuneiden kurssien ”keskeneräisissä suorituksissa” ole yhteydessä kurssin vastuopettajaan, ellei alla olevassa ohjeessa ole toimintatapaa tarkemmin ilmoitettu.
- Varmista tutkinnon laajuuden täytyminen hopsisi päivitystilanteessa

2020-21 ops	Muutos 2021-22 opsiin	Kuinka toimia opintojen suunnittelussa
3122242 Structure and function of plants, 3 cp	Kurssia ei opeteta enää. Korvaava opintojakso 3122324 Book examination, plant physiology 3 cp tai 3123198	Voit joko tenttiä 3122242 kurssin yleisessä tentissä; tai suorittaa opintojakson 3122324 vähintään 3 op

	Function of plants in changing environment, 8 cp	laajuisena; tai suorittaa kurssin 3123198 8 op laajuisena.
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### *Curriculum for MDP Wood Materials Science (120 ECTS)*

#### *Compulsory studies, 97 ECTS*

3513061	Academic Skills in Forest Sciences	1,5 ECTS	I
3513142	Basics of Wood Materials Science	4 ECTS	I
3622111	Basic Statistics in English	5 ECTS	II
3514017	Industrial Forest Biotechnology and Biorefining	6 ECTS	IV
8020270	Information Skills and Sources in Science and Forestry	1 ECTS	I
3513135	Innovation Management	4 ECTS	IV
3513162	Laboratory Practices and Methods for Wood Materials...	5 ECTS	III
3513139	Master's Thesis	30 ECTS	I-IV
3513141	Maturity test	0 ECTS	IV
3513130	Organic and Biomass Chemistry	6 ECTS	I
3513147	Perspectives to Bioeconomy	6 ECTS	III
3513136	Practical Training in Wood Materials Science	10 ECTS	Summer
3513148	Research Methodology in Forest Sciences	3,5 ECTS	II
3513159	Structure and Properties of Wood-based Materials	5 ECTS	I
3513166	Thesis Seminar in Wood Materials Science	2 ECTS	I-IV
3352578	Wood-based Solid and Composite Materials	5 ECTS	II

#### *Elective studies, choose 18-23 ECTS*

3312073	Applications of Photonics	4 ECTS	II
3410316	Basic Principles of Mass Spectrometry	4 ECTS	I-II
3513019	Bioenergy Markets and Policies	6 ECTS	III
3410364	Biological Mass Spectrometry	3 ECTS	III-IV
3410336	Characterization of Methods for Polymers	3 ECTS	IV
3410365	Chemistry of Biofuels	4 ECTS	III-IV
3513150	Co-management of Natural Resources	5 ECTS	III-IV
3513040	Economics of Multiple-use Forestry	3 ECTS	I
3513057	Fibrous Products	6 ECTS	I
3513055	Forest Products Mechanics	3 ECTS	I
3513151	International Forest Governance and Environmental Pol...	5 ECTS	IV
3352572	Material Techniques	5 ECTS	I
3513058	Measurement, Scaling and Instrumentation	5 ECTS	IV
3123186	Optical Methods in Plant Biology and Environmental Re...	4 ECTS	I-II
3312039	Paper and Printing Optics	5 ECTS	III-IV
3410369	Polymers and Nanomaterials	4 ECTS	IV
3513129	Supply and Energy Use of Lignocellulosic Biomass	6 ECTS	I-II
	Selected studies in Karelia UAS, max 15 ECTS		
	Selected studies in Savonia UAS, max 15 ECTS		

#### *Additional studies, choose 0-5 ECTS to complete your studies to 120 ECTS*

8015013	Academic Writing Skills for Students in the MSc Prog...	3 ECTS	III-IV
1130007	Career Planning	2 ECTS	on-line
3352573	Characterization of Materials	5 ECTS	III-IV
3513127	Current Issues in Forest Conservation and Biodiversity	3 ECTS	II
3122317	Final Examination in Plant Physiology	7 ECTS	on-line

3123198	Function of Plants in Changing Environment	8 ECTS	III-IV
3513149	Intensive Forest Management and Production of Forest...	3 ECTS	I
3310306	Numerical Methods in Photonics	2 ECTS	I
1131003	Orientation for International Students	1 ECTS	I
8031006	University Computing Skills	2 ECTS	I
8031003	University Study Skills	1 ECTS	I
	Other studies to be decided together with the thesis supervisor		

*3513061 Academic Skills in Forest Sciences 1,5 ECTS*

**Total 120 ECTS**