

Universität für Bodenkultur Wien

University of Natural Resources and Life Sciences, Vienna



Curriculum

for the Master Programme in

Wood Technology and Management

Programme Classification No. 066 426

Effective Date: October 1st, 2024



For legal purposes, only the version of the curriculum that has been published in the official journal (Mitteilungsblatt) is binding and valid - this English translation is for information purposes only.

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Curriculum of the Master Degree Programme

“Wood Technology and Management”

At the University of Natural Resources and Life Sciences, Vienna

As at October 1st, 2024

§ 1 QUALIFICATION PROFILE

The Master programme in Wood Technology and Management is a degree programme which serves to deepen and extend students' pre-vocational academic education, building on the basis provided by a Bachelor degree programme (§ 51 [2] item 5 of the Universities Act UG 2002, Federal Law Gazette BGBl I no. 81/2009). The programme fulfils the requirements of Directive 2005/36/EC on the recognition of professional qualifications, article 11, letter e.

1a) Knowledge and Personal and Professional Skills

The graduates of the Master study programme Wood Technology and Management are equipped with comprehensive knowledge, skills and abilities in order to take over executive functions in corresponding businesses, for service providers as well as in administration, in the field of the value added chain forest, wood and natural fibers and generally in the field of utilizing renewable resources. The graduates have professional competences in order to especially deal with technical and economic tasks in the service industries and production for a sustainable use of the raw material wood and natural fibers. The knowledge and competences acquired comprise not only the state of the technology and especially the field of current production but also the areas of research, development and innovation. The professional and personal competences of graduates are affected by the integration of engineering technology and contents taken from socio-economics, research-driven teaching, the promotion of independent knowledge building as well as problem-solving competences and skills in the field of communication and cooperation. Graduates are aware of their leadership abilities and the importance of lifelong learning, mobility and internationalization for their professional careers. Graduates of the Master study programme Wood Technology and Management are equipped with advanced language competences thanks to courses held in foreign languages and the internationalization of their learning environment in research and university education. They have the possibility to start networking with the economic sector and research institutions or other potential future employers while being enrolled in this study programme. The offered specialisation programmes allow for an in-depth specialisation in a more scientific-technical or technological-economic direction respectively.

1b) Professional Qualifications

Due to the interdisciplinary character (technical sciences and engineering, natural sciences as well as economics and social sciences) of the Master study programme Wood Technology and Management, graduates face an extensive range of professional activities and occupations based on their chosen professional academic specialisation. The occupational fields comprise all academically relevant tasks for an efficient use and the processing of renewable resources related to wood. This also includes connected economic

domains such as machine and plant engineering as well as the supply chain such as the gluing and varnish industry.

The fields of work for graduates of the Master study programme Wood Technology and Management exemplarily includes the following areas of private, public and non-profit sectors for the use of renewable resources with a focus on wood:

- Technical and economic organization of the production of wood and engineered wood as well as intermediate components and final products thereof.
- Research, development and innovation, also in respective service industry facilities (institutes), including the field of training and further qualification courses.
- Directing research and developmental institutions in the fields of solid wood, wood and fiber composite materials as well as wood industrial manufacturing.
- Strategic and operational management of businesses, departments (for example research and developmental departments, technology and product development, application engineering) related to questions of acquisition, production, logistics, market research and business potential planning.
- Counseling and consultancy firms, work as an authorized expert as well as tasks for testing institutes.
- Work for national and international interest groups and lobbies, environmental agencies, relevant non-governmental organizations, and others.
- Administrative work for the EU, federal, communal and regional governments.

§ 2 ADMISSION REQUIREMENTS

Graduates of the Bachelor programme in Wood and Fibre Technology (033 226) offered by BOKU University of Natural Resources and Life Sciences or thematically equivalent Bachelor programmes of all recognised national and international universities are eligible for admission with no further requirements.

Graduates of the Bachelor programme Forestry (033 225) are required to complete the following courses in order to complement their competences and skills:

| Course Number | Course Title | Course Type | Semester | ECTS Credits |
|---------------|-------------------------------------|-------------|----------|--------------|
| 891103 | Wood chemistry ¹ | VO | WS | 3.0 |
| 891106 | Wood technology | VO | SS | 4.0 |
| 893142 | Introduction to process engineering | VO | SS | 6.0 |

For graduates of Bachelor programmes completed at other universities, mastery of the following learning outcomes is required for admission:

- (1) Knowledge of basic subjects for wood science:
Mathematics, statistics, physics, chemistry, botany, material science, solid mechanics, process engineering, process technology, technical drawing, mechanical engineering, business administration, economics.
- (2) Knowledge of central subjects of wood science:
Wood biology, diseases, pests and protection of wood and wood-based products, wood technology, electrical and control engineering, metrology, production

management, wood machining, timber constructions, wood processing, ergonomics, wood products markets, accounting, forest sector policy, law.

When competences and skills of both areas can be assured via the positive completion of courses to an extent of 40 ECTS credit points each, a direct admission to the study programme takes place.

Furthermore, competences in English at a level of B2 (according to the Common European Framework of Reference for Languages by the Council of Europe) are recommended.

§ 3 PROGRAMME STRUCTURE

3a) Duration, Total ECTS Credits and Structure

The programme consists of courses and other requirements worth a total of 120 ECTS credits. This is equivalent to a duration of four semesters (a total of 3,000 60-minute credit hours). The programme is divided into

| | |
|--------------------------|----------------------------|
| Compulsory courses: | 36 ECTS credits, including |
| Master's Thesis seminar: | 2 ECTS credits |
| Field trips: | 3 ECTS credits |
| Internship: | 3 ECTS credits |
| Master's Thesis: | 30 ECTS credits |
| Elective courses: | 42 ECTS credits |
| Free electives: | 12 ECTS credits |

Students are required to complete courses, which are related to the field of study, worth a total of 10 ECTS credits taught in a foreign language. These courses can be compulsory courses, elective courses or free electives. Courses taken at international universities abroad are to be credited. General language courses (with the exception of specialised language courses) will not be considered. (General foreign language courses may be credited in the framework of free elective courses.)

3b) Three-Pillar Principle

The three-pillar principle is one of the central identifying characteristics of both the Bachelor and Master programmes offered at the University of Natural Resources and Life Sciences, Vienna. In the Master programmes, the sum of the compulsory and elective courses must be made up of at least

- 15% technology and engineering
- 15% natural sciences
- 15% economic and social sciences, law

The Master's Thesis, internship and free electives are excluded from the three-pillar rule.

3c) Limited Number of Participants in Courses

For courses with a limited number of participants the head of the Master course is authorized to first admit students enrolled in the Master programme (that means that students enrolled in a Bachelor study programme can only be admitted to the courses if further spaces are left

on the course!) The admission of students enrolled in the Master study programme is conducted according to the following order of required courses by the students: compulsory course, elective course, free elective course.

§ 4 COMPULSORY COURSES

Used Abbreviations:

ECTS = European Credit Transfer System

WS = Winter Semester

SS = Summer Semester

Notes:

- 1) In English
- 2) In English and German
- 3) Courses not offered in the academic year 2024/25
- 4) Courses only offered in uneven years (e.g. 2021/22, 2023/24)
- 5) Courses only offered in even years (e.g. 2022/23, 2024/25)

The following compulsory courses worth a total of 36 ECTS points are required to complete the Master programme:

| Course Number | Compulsory Courses | Course Type | Semester | ECTS Credits |
|---------------|---|-------------|----------|--------------|
| | Course Title | | | |
| 892321 | Solid state mechanics | VU | SS | 3.0 |
| 892323 | Technical materials | VO | SS | 5.0 |
| 891326 | Wood industrial processes: solid wood processing (HTM) ¹ | VO | WS | 3.0 |
| 891327 | Wood-industrial processes: Wood- and fibre-based materials ¹ | VO | WS | 2.0 |
| 891309 | Wood Industry laboratory | UE | WS | 3.0 |
| 891328 | Wood cutting, milling, moulding | VO | WS | 2.0 |
| 734320 | Procurement | VO | WS | 1.0 |
| 735327 | Market research and market analysis | VU | SS | 3.0 |
| 734323 | Business management I | VU | WS | 3.0 |
| 733311 | Business planning | VO | SS | 3.0 |
| 891310 | Specialised field trip II ⁵ | EX | WS | 1.5 |
| 891329 | Specialised field trip III ⁴ | EX | WS | 1.5 |
| 891332 | Compulsory internship seminar - wood technology and management ² | PP | WS or SS | 3.0 |
| 890301 | Master's thesis seminar ¹ | SE | WS or SS | 2.0 |

§ 5 ELECTIVE COURSES

Elective courses worth a total of no less than 42 ECTS credits are required to complete the Master programme. There are 2 options to achieve this.

5a) Option 1

Elective subjects to an extent of at least 42 ECTS credit points have to be completed successfully. 30 of these ECTS credit points have to be taken as modules. This corresponds to five modules from which all elective courses have to be completed successfully. 12 ECTS credit points can be chosen freely from the remaining elective courses.

| Course Number | Module 1: Engineered Materials and Products | Course Type | Semester | ECTS Credits |
|---------------|---|-------------|----------|--------------|
| | Course Title | | | |
| 891333 | Composite ¹ | VO | WS | 2.0 |
| 891334 | Engineered wood products ¹ | VO | WS | 2.0 |
| 891336 | Wood materials modification ¹ | VU | WS | 2.0 |
| Course Number | Module 2: Wood and Fibre Science | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 892324 | Wood physics | VU | SS | 2.0 |
| 891337 | Wood and fibre material performance | VU | SS | 2.0 |
| 891338 | Wood and fibre quality ¹ | VO | WS | 2.0 |
| Course Number | Module 3: Biorefinery | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 891339 | Wood - biotechnology | VS | SS | 2.0 |
| 970304 | Biobased and biodegradable plastics | VO | WS | 2.0 |
| 774326 | Chemicals from biomass ¹ | VO | WS | 2.0 |
| Course Number | Module 4: Wood Industry Process Engineering and Manufacturing Systems | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 891340 | Manufacturing systems ⁵ | VO | WS | 2.0 |
| 891341 | Processing systems ¹ | VO | SS | 2.0 |
| 891342 | Process control and analytics | VU | SS | 2.0 |
| Course Number | Module 5: Technology of Polymers | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 774327 | Chemistry and technology of polymers | VO | WS | 2.0 |
| 891343 | Adhesive technology ¹ | VU | SS | 2.0 |
| 891344 | Coating and surfaces | VU | WS | 2.0 |
| Course Number | Module 6: Timber Construction | Course Type | Semester | ECTS Credits |

| | Course Title | | | |
|----------------------|---|--------------------|-----------------|---------------------|
| 892306 | Building physics ¹ | VO | WS | 3.0 |
| 876353 | Advanced structural timber engineering ¹ | VU | WS | 4.0 |
| Course Number | Module 7: Concurrent Engineering | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 891347 | Product design ¹ | VS | WS | 2.0 |
| 735339 | Market-oriented innovation processes | VU | WS | 3.0 |
| 891348 | Quality assurance and testing methods | VO | SS | 1.0 |
| Course Number | Module 8: Logistics Management | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 734329 | Logistic systems | VS | SS | 6.0 |
| Course Number | Module 9: Advanced Planning and Simulation | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 734324 | Simulation of enterprise processes | UE | SS | 3.0 |
| 734328 | Advanced planning systems in forest based industries ¹ | SE | SS | 3.0 |
| Course Number | Module 10: Business Management and Controlling | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 734333 | Controlling in the wood products industry | VU | WS | 3.0 |
| 734327 | Business management II | VU | SS | 3.0 |
| Course Number | Module 11: Environment | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 891323 | Life-cycle analysis of wood and natural-fibre products | VS | WS | 1.0 |
| 736133 | Environmental law | VO | WS | 2.0 |
| 891349 | Plant and environment technology | VS | SS | 2.0 |
| 891350 | Methods for the assessment of scrap wood | VO | SS | 1.0 |
| Course Number | Module 12: Tools and Methods | Course Type | Semester | ECTS Credits |
| | Course Title | | | |
| 891325 | Research design ¹ | VU | WS | 2.0 |
| 915327 | Project management ¹ | VU | SS | 3.0 |
| 734334 | Modeling of techno-economical processes | VU | WS | 2.0 |

5b) Option 2

Elective courses worth a total of no fewer than 42 ECTS credits have to be completed. When a certain combination of six entire modules is completed successfully, this is regarded as a specialisation and can be listed in the Master's Thesis certificate. The additional 6 ECTS

credit points can be chosen freely from the remaining elective courses. The following specialisations can be chosen:

- Wood Material Engineering and Processing
- Wood Industrial Management

| Wood Material Engineering and Processing |
|---|
| Modules |
| Module 1: Engineered Materials and Products |
| Module 2: Wood and Fibre Science |
| Module 3: Biorefinery |
| Module 4: Wood Industry Process Engineering and Manufacturing Systems |
| Module 5: Technology of Polymers |
| Module 6: Timber Construction |

Learning outcomes: In addition to the comprehensive pool of knowledge, skills and competences, which are provided by the three pillars principle of the BOKU compulsory core areas, the specialisation offers further specific competences for tasks that are scientifically founded in the fields of research, development and university teaching. The specialisation imparts further knowledge and skills for ecologically efficient design and manufacturing of materials and products from wood and natural fibers. These specialisations include content-related as well as methodical competences for the implementation of innovation processes with a focus on resource efficient technology development. Due to high share of courses held in foreign languages an international focus is also guaranteed.

| Wood Industrial Management |
|---|
| Modules |
| Module 4: Wood Industry Process Engineering and Manufacturing Systems |
| Module 7: Concurrent Engineering |
| Module 8: Logistics Management |
| Module 9: Advanced Planning and Simulation |
| Module 10: Business Management and Controlling |
| Module 11: Environment |

Learning outcomes: When taking courses of the specialisation Wood Industrial Management students acquire knowledge and skills for leading positions related to the entire production and value added chain of forests and wood including its related economic fields. In addition to a comprehensive pool of knowledge, skills and competences, which are provided by the three pillars principle of the BOKU compulsory core areas (§4), the specialisation offers specific competences for the strategic and operational management of businesses, business departments, institutes and organizations. The specialisation imparts further knowledge and skills in fields such as logistics, market research, product development as well as business related potential planning and related innovation processes.

§ 6 FREE ELECTIVES

Free electives worth a total of 12 ECTS credits are required to complete the Master programme. Free electives may be selected from all courses offered by all recognized universities in Austria and abroad. Free electives are intended to impart knowledge and skills in the student's own academic subject as well as in fields of general interest.

When it comes to the choice of the option "Specialisation" it is recommended that the free elective subjects are chosen from the course offer of the elective courses according to §5 or from a list of recommended free courses.

§ 7 INTERNSHIP

An internship of a duration of 3 weeks is part of the curriculum of the Master programme in Wood Technology and Management. The internship is equivalent to a total of 3 ECTS points. Activities within the internship placement have to correspond to one of the fields of the Master programme in Wood Technology and Management.

The practical experience Wood Technology and Management which is supervised by university lectures of the study programme should be completed in accordance with the chosen options according to §5 in the environment of the management of businesses or organizations, scientific institutions or research and developmental departments on a national or international scale respectively.

For the completion of the internship, students have to present their experiences in the compulsory internship seminar "Practical experiences seminar – Wood technology and management."

§ 8 FIELD TRIPS

Both professional excursions of the compulsory core areas which are held alternately have to be completed successfully.

§ 9 MASTER'S THESIS

A Master's Thesis is a paper on a scientific topic, to be written as part of the Master programme Wood Technology and Management (for exceptions please see the By Laws of the University of Natural Resources and Life Sciences, Vienna, part III- Teaching, § 30[9]). The thesis is worth a total of 30 ECTS credits. With their Master's Thesis, students demonstrate their ability to independently address a scientific topic, both thematically and methodologically (§ 51 [8] UG 2002 BGBl. I no. 81/2009).

The topic of a Master's Thesis shall be chosen in such a way that it can be related to a subject area of the curriculum and that it is reasonable to expect a student to be able to complete it within six months. Multiple students may jointly address a topic, provided that the performance of individual students can be assessed (§ 81 [2] UG 2002 BGBl. I no. 81/2009).

The Master's Thesis shall be written in German or English. Languages other than German or English are permissible only if approved and confirmed by the thesis supervisor. The thesis defence must be held in German or English regardless of the language of the thesis.

§ 10 COMPLETION OF THE MASTER PROGRAMME

The Master programme in Wood Technology and Management has been completed when the student has passed all required courses and received a positive grade on the Master's Thesis and defence examination.

§ 11 ACADEMIC DEGREE

Graduates of the Master programme in Wood Technology and Management are awarded the academic title Diplom-Ingenieur (m) or Diplom-Ingenieurin (f), abbreviated as Dipl.-Ing./ Dipl.-Ing.ⁱⁿ or DI/DIⁱⁿ.

The academic title Dipl.-Ing./Dipl.-Ing.ⁱⁿ or DI/DIⁱⁿ, if used, shall precede the bearer's name (§ 88 [2] UG 2002 BGBl. I no. 81/2009).

§ 12 EXAMINATION REGULATIONS

(1) The Master programme in Wood Technology and Management has been completed successfully when the following requirements (corresponds to components in [7] below) have been met:

- positive completion of compulsory courses worth a total of 36 ECTS credits (§ 4). This includes:
 - o positive completion of the Master's Thesis seminar worth a total of 2 ECTS credits (§4);
 - o positive completion of the field trips worth a total of 3 ECTS credits
 - o positive completion of the internship worth a total of 3 ECTS credits
- positive completion of elective courses worth a total of 42 ECTS credits (§ 5);
- positive completion of free electives worth a total of 12 ECTS credits (§ 6);
- a positive grade on the Master's Thesis and the defence examination.

(2) Student evaluation takes the form of course and module examinations. Modules are regarded as completed if all examinations of all the courses of the respective module have been successfully completed. Course examinations can be either written or oral, as determined by the course instructor, taking the ECTS credit value of the course into account. Any prerequisites for admission to examinations shall be listed in § 4 under the respective course/module.

(3) The choice of examination method shall be based on the type of course: Lectures shall conclude with a written or oral examination, if continuous assessment of student performance is not applied. Seminars and project-based courses can be evaluated based on independently written papers, length and contents of which are determined by the course instructor. For all other course types, the examination type is at the instructor's discretion.

(4) The topic of the Master's Thesis shall be selected from one of the subjects of the Master programme. The student must inform the dean in writing prior to the commencement of the work on the Master's Thesis. Thereby, the student has to state the Master's Thesis topic as well as the name of the supervisor of the Master's Thesis.

(5) The completed Master's Thesis which has been assessed positively by the supervisor shall be publically presented by the student and defended in the form of an academic discussion (defence examination) after successful completion of all courses. The committee shall consist of a committee chair and two additional university lecturers with a *venia docendi* or equivalent qualification. The student's total performance (thesis and defence examination) will be assigned a comprehensive grade. Both thesis and defence examination must receive a passing grade for the student to complete the programme. The written evaluations stating the grounds for the thesis grade and the defence examination grade are included in calculating the comprehensive grade and are documented separately.

The comprehensive grade is calculated as follows:

- Master's Thesis: 70%
- Defence examination (incl. presentation): 30%

(6) A comprehensive evaluation of the student's performance on the entire programme shall be assigned. A comprehensive evaluation of "passed" means that each individual component of the programme was completed successfully. If individual components of the programme have not been successfully completed, the comprehensive evaluation is "failed". A comprehensive evaluation of "passed with honours" is granted if the student has received no grade worse than a 2 (good) on all individual components, and if at least 50% of the individual components were graded with 1 (excellent).

§ 13 TRANSITIONAL PROVISIONS

Students who have not completed the formerly effective Master's curriculum in Wood Technology and Management (UH 066 426) when this new Master's curriculum comes into force are transferred to the currently valid one.

For students in the new Master's curriculum already positively completed exams on courses from the old Master's curriculum are acknowledged based on the equivalence list for the respective study programme.

§ 14 EFFECTIVE DATE

This curriculum shall take effect on October 1st, 2024.

ANNEX A TYPES OF COURSES

The following types of courses are available:

Lecture (VO)

Lectures are courses in which certain areas of a subject and the methods used in this area are imparted through didactic presentation.

Lab Course (UE)

Lab courses are courses in which students are instructed in specific practical skills, based on theoretical knowledge.

Practical Course (PR)

Practical courses are classes in which students deal with specific topics independently, based on previously acquired theoretical and practical knowledge.

Compulsory Internship Seminar (PP)

The compulsory internship seminar is a class in which students deal independently with topics related to their internship placements, based on previously acquired theoretical and practical knowledge.

Seminar (SE)

Seminars are courses in which students are required to work independently on the respective subject, deepen their knowledge of the topic and discuss relevant issues.

Field Trips (EX)

Field trips are courses in which students have the opportunity to experience relevant fields of study in real-life practical application, to deepen their knowledge of the respective subject. Field trips can be taken to destinations both in Austria and abroad.

Master's Thesis Seminar (MA)

Master's Thesis seminars are seminars intended to provide students with academic support during the thesis writing process.

Project Course (PJ)

Project courses are characterized by problem-based learning. Under instruction, students work (preferably in small groups) on case studies, applying appropriate scientific methods.

Mixed-Type Courses:

Mixed-type courses combine the characteristics of the courses named above (with the exception of project-type courses). Integration of different course-type elements improved the didactic value of these courses.

Lecture /Seminar (VS)

Lecture/Lab (VU)

Lecture/Field Trip (VX)

Seminar/Field Trip (SX)

Lab/Seminar (US)

Lab/Field Trip (UX)