Universität für Bodenkultur Wien

BOKU University, Vienna

Curriculum

for the Master Programme in

Plant Science

Programme classification no. 066 455

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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.

CONTENTS

1 § Qualification Profile 3

2 § Admission Requirements 4

§ 3 Programme Structure 4

§ 4 Compulsory Courses 6

§ 5 Elective Courses 7

§ 6 Free Electives 10

§ 7 Internship 10

§ 8 Master's Thesis 10

§ 9 Completion of the Master Programme 10

§ 10 Academic Degree 11

§ 11 Examination Regulations 11

§ 12 Transitional Regulations 12

§ 13 Effective Date 12

Annex A Types of Courses 13

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Curriculum of the Master Degree Programme
"Plant Sciences"
At the University of Natural Resources and Life Sciences, Vienna

As at October 1st, 2025

1 § QUALIFICATION PROFILE

The Master programme in Plant Sciences 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 Master programme in Plant Sciences imparts students a substantial and cross-curricular knowledge of functions and strategies of the utilisation of agricultural ecosystems for the production of vegetable raw materials for food- and feedstuffs, industrial raw materials and energy carriers. Students of the Master programme in Plant Sciences acquire interdisciplinary, scientifically-based qualifications for their further career in the area of crop production.

The broad choice of elective courses allows students to choose an individual qualification profile that is characterized by advanced knowledge in the natural sciences from a molecular to an ecosystemic level as well as skills concerning the specific and relevant agrarian and horticultural scientific methods.

Through free elective courses as well as foreign language-taught courses and the possibilities of international student mobility, students acquire competences in the interdisciplinary cooperation with other programmes, such as Agricultural and Food Economy, Livestock Sciences, or Organic Agriculture, as well as in international cooperation.

In the course of the Master programme, graduates have acquired the following scientifically-oriented key qualifications: broad expert knowledge, interdisciplinary joined-up thinking, analytical and problem-solving abilities, abilities of transfer from gained knowledge and conclusions in natural and engineering sciences to the agricultural practice, abilities of project work and team work as well as communication abilities.

1b) Professional Qualifications

Graduates of this programme are active in various fields of work in private as well as public organisations related to agriculture and horticulture and on local, national or international level: e.g. in the fields of production, marketing and supply of services (agrarian businesses, business cooperations, producer groups), upstream and downstream areas (business, industry or trade in agricultural and horticultural economics), counselling and training (Chamber for Agriculture, freelance counselling, agrarian schools and education), agrarian administrative office work and politics (provincial governments, ministries, EU-institutions, lobbies, controlling and certifying) as well as research and development (universities, research centres, industry).

2 § ADMISSION REQUIREMENTS

Graduates of the Bachelor programmes in Agricultural Sciences and Viticulture, Enology and Wine Economics offered by BOKU University of Natural Resources and Life Sciences are eligible for admission with no further requirements.

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

1. Knowledge in the basics of natural sciences (e.g. botany, molecular biology, physics, chemistry, maths and statistics) with a certificate of a total of at least 20 completed ECTS points for these subjects.
2. Knowledge in the basic areas of agricultural production techniques (e.g. plant breeding, plant nutrition, plant protection, agricultural and horticultural crop production, agricultural engineering, basics in animal production) with a certificate of a total of at least 35 completed ECTS points for these subjects.
3. Knowledge in the basic areas of social and economic sciences as well as law (e.g. economics, business management, agricultural markets, policy, and law) with a certificate of a total of at least 20 completed ECTS points for these subjects.

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:	40 ECTS credits (including Master's Thesis seminar)
Master's Thesis:	30 ECTS credits (excluding Master's Thesis seminar)
Elective courses:	32 ECTS credits
Free electives:	18 ECTS credits
Foreign language-taught courses*):	10 ECTS credits

*) Re foreign language-taught courses

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, internships 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.)
A total of 20 ECTS credits worth of courses taught in English must be offered in the list of compulsory and elective courses included in this curriculum.

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, compulsory 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 authorised 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 2025/26
[4]) Courses only offered in uneven years (e.g. 2017/18, 2019/20, 2021/22)
[5]) Courses only offered in even years (e.g. 2016/17, 2018/19, 2020/21)

The following compulsory courses worth a total of 40 ECTS credits are required to complete the Master programme:

Subject (Module)	**Course Type**	**ECTS Credits**
Course Title		
Master's Thesis seminar	SE	2
Interdisciplinary field trip (2 ECTS from the excursion pool below)	EX	2
Excursion pool:		
Production technology in grassland	EX	0.5
Production technology in crop husbandry	EX	0.5
Crop production	EX	1
Field trip for fruitgrowing and viniculture	EX	1
Vegetable growing - field trip	EX	0.5
Cultivation of perennials and planting design	EX	0.5
Field crop production and products	VS	4
Field crop breeding	VO	3
Parasitology and pathology of crop plants	VO	3
Physiology of crop nutrition[1]	VO	4
Soil physics and chemistry[1]	VO	3
Special vegetable growing	VX	3
Specific fruit production	VX	3
Agricultural engineering in plant production – seminar[1]	SX	4
Agricultural law	VO	3
Experimental design	VO	3
Advanced vineyard management[1]	VS	3

§ 5 ELECTIVE COURSES

Elective courses worth a total of at least 32 ECTS credits are required to complete the Master programme.

W-1: Crop Production and Grassland Management	**Course Type**	**ECTS Credits**
Course Title		
Cropping systems analysis[1]	VS	4
Crop production in the tropics and subtropics[1]	VO	4
Regeneration resources I	VO	4
Aspects of product quality in plant production[1]	VX	4
Medicinal and aromatic plants[1]	VO	3
Grassland management	VS	4
Plant sociology and soil aspects of the grassland farming	VO	2
Grassland management	VO	3
Restoration in the alpine area	VO	3
Crop production - practical course	UX	3
Physiology of crop nutrition - laboratory exercises[1]	UE	3
Ecology and population biology of plants in agro-ecosystems[1]	VX	5
W-2: Crop Protection	**Course Type**	**ECTS Credits**
Course Title		
Biological and biotechnical plant protection	VU	3
Laboratory diagnosis	UE	3
Biology and ecology of weeds	VO	3
Principles and methods in weed control	VX	3
Phytopathology	VS	3
Global change and pest management[1]	VO	3
Protection of stored crops	VX	3
Current plant protection issues	SE	3
Soil-borne pathogenes and symbionts	VU	3
Phytomedicine in pomology[1]	VU	3
Integrated and biological pest management in horticultural crops	VU	3
Agricultural pest diagnostics	UX	3
Chemistry and application of pesticides	VX	3
Techniques for plant determination[5]	VS	2
Plant determination – exercises[5]	UX	1
W-3: Plant Biotechnology and Breeding	**Course Type**	**ECTS Credits**
Course Title		
Plant breeding - principles and methods[1]	VO	3
Plant breeding - principles and methods - practical exercises[1]	UX	3
Molecular phytopathology[1]	VU	4
Plants in food science and biotechnology[1]	VO	3
Practical course in plant biotechnology[1]	UE	4.5
Plant biochemistry	VO	2

Molecular plant breeding[1]	VO	3
Molecular plant breeding practical[1]	UE	4
Resistance breeding of crop plants[1]	VO	3
Oilseed crops - breeding, production, utilisation[3]	VS	3
Field crop breeding - excercise course and field trip	UX	3
Biometrics in plant breeding and breeding research	VU	3
Breeding of horticultural and fruit crops	VO	3
Breeding of horticultural and fruit crops	UE	3
W-4: Viticulture and Pomology	**Course Type**	**ECTS Credits**
Course Title		
Quality assurance in fruit growing[5]	VO	3
Pomology and variety preservation[2]	VU	3
Processing technology of fruit and vegetable	VO	3
Organic fruit production and organic viticulture[1]	VX	3
Research project in viticulture and fruit sciences[1]	PJ	4
Genetic control of secondarymetabolites in perennial crop plants[1]	VS	3
Viticulture and pomology journal club[1]	VS	3
Plant pathology in viticulture	VU	3
Risk analysis in viticulture	VS	3
Traditional and molecular aspects of grapevine breeding and selection[1]	VS	3
World wines and viticulture[1]	VS	3
Biology and physiology of the grapevine[1]	VS	3
W-5: Horticulture and Horticultural Design	**Course Type**	**ECTS Credits**
Course Title		
Horticultural products as a source of functional food: physiological and nutritional aspects[1]	VS	3
Use of ornamental and scented plants (indoor, balcony, terrace, garden)	UX	3
Use of ornamental trees in landscaping	VU	3
Colour in garden design	VS	3
Preservation of historic gardens[3]	VS	3
Tree diseases in urban areas and cultural landscapes	VO	3
Perennials and annuals	VU	3
Organic horticulture (vegetables and ornamentals)[1]	VX	3
Floriculture[1]	VS	3
The nature of tree nursery	VS	3
Methods in horticultural physiology[1]	SX	3
Project in horticulture[2]	PJ	4
Quality in horticulture	VS	3
W-6: Soil Science	**Course Type**	**ECTS Credits**
Course Title		
Soil Indicators[1]	VO	3
Interdisciplinary project work: soil sciences[1]	PJ	6

Soil physics - exercises in the laboratory	UE	3
Soil chemistry laboratory[1]	UE	3
Soil microbiology	VO	3
Soil microbiology course[1]	UE	4
Root traits and rhizosphere processes for sustainable soil management[1]	VO	3
Soil structure: development, functions and changes in agricultural soils	VX	4
Molecular microbial ecology of soils[1]	VU	3
Land taxation and soil mapping	VU	3
Soil in the environment	VX	3
W-7: Agricultural Engineering	**Course Type**	**ECTS Credits**
Course Title		
Mechanisation on grassland	VO	3
GPS-based agriculture	VX	3
Climate engineering	VO	3
Post-harvest technology1	VO	3
Composting technology	VX	3
Physical properties of agricultural products and materials	VO	3
Technology assessment of agricultural systems.	VS	3
Instruments of an advisory service for agricultural engineering and construction	VS	3
Biogas technology	VU	3
Production systems and atmospheric pollution[1]	VO	3
Technology manure utilisation	VU	3
Mechanization of agriculture in developing countries[1]	VS	4
W-8: Supplemental Courses	**Course Type**	**ECTS Credits**
Course Title		
Scientific working for crop sciences	SE	3
Agrometeorology[1]	VO	3
Experimental design - lab	UE	3
Bioinformatics: Selected aspects[1]	VU	3
Mathematical modelling in life sciences	VU	3
Water relations of plants[1]	VO	3
Soil - water - landscape	VO	3
International agriculture[1]	VO	3
Stress physiology of plants	VO	2
Humus	VO	3
Biotechnology law[1]	VU	3
Women in rural gardening and agriculture	VU	3
Quality evaluation of horticultural products	US	3

§ 6 FREE ELECTIVES

Free electives worth a total of 18 ECTS credits are required to complete the Master programme. Free electives may be selected from all courses offered by all recognised 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.

A list of recommended free electives is included in Annex B.

§ 7 INTERNSHIP

For the Master programme in Plant Sciences no compulsory internship is required. It is, however, recommended to deepen those competences gained during the study programme in voluntary vocational practice experiences. A practical training can be completed both at a university facility and an appropriate institution, establishment or business if those facilities are adequate. The vocational practical experience can be completed in the frame of the free electives and to an extent of 4 weeks in terms of a full employment (this accounts for 3 ECTS credit points). This practical experience has to be approved by the Programme Coordinator and has to provide for a meaningful addition to the study programme.

§ 8 MASTER'S THESIS

A Master's Thesis is a paper on a scientific topic, to be written as part of a Master degree programme (for exceptions please see the By Laws of the University of Natural Resources and Life Sciences, Vienna, § 86[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 the Master's thesis shall be taken from a subject of the study programme. The Master's thesis is supervised by a person with full teaching authorisation (venia docendi) in this subject (exception: § 86 para. 7 of the Constitution of the University of Natural Resources and Life Sciences, Vienna). Joint supervision by two persons with full teaching authorisation (venia docendi) is permissible if at least one of these two persons represents a subject of the study programme.

The topic of a Master's Thesis shall be chosen in such a way 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.

§ 9 COMPLETION OF THE MASTER PROGRAMME

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

§ 10 ACADEMIC DEGREE

Graduates of the Master programme in Plant Sciences are awarded the academic title Diplom-Ingenieur (m) or Diplom-Ingenieur^{in} (f), abbreviated as Dipl.-Ing./ Dipl.-Ing.^{in} or DI/DI^{in}. The academic title Dipl.-Ing./Dipl.-Ing.^{in} or DI/DI^{in}, if used, shall precede the bearer's name (§ 88 [2] UG 2002 BGBl. I no. 81/2009).

§ 11 EXAMINATION REGULATIONS

(1) The Master programme in Plant Sciences has been completed successfully when the following requirements have been met:

- positive completion of compulsory courses, including the Master's Thesis seminar, worth a total of 40 ECTS credits (§ 4)
- positive completion of elective courses worth a total of 32 ECTS credits (§ 5)
- positive completion of free electives worth a total of 18 ECTS credits (§ 6)
- a positive grade on the Master's Thesis and the defence examination.

(2) Student evaluation takes the form of course examinations. 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.

(3) The choice of examination method shall be based on the type of course: Lectures shall conclude with a written and/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).

§ 12 TRANSITIONAL REGULATIONS

Students who have not completed the formerly effective Master’s curriculum in Plant Sciences (UH 066 455) 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.

§ 13 EFFECTIVE DATE

This curriculum shall take effect on October 1st, 2025.

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)