Universität für Bodenkultur Wien

University of Natural Resources and Life Sciences, Vienna

Curriculum

for the Master Programme in

Phytomedicine

Programme Classification No. 066 422

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

As at October 1st, 2023

§ 1 QUALIFICATION PROFILE

The Master programme in Phytomedicine is a degree programme which serves to deepen and extend students' pre-vocational academic education, building on the basis provided by a Bachelor programme in agricultural sciences, forestry, biology or equivalent programmes (§ 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

Graduates of the Master programme Phytomedicine are equipped with consolidated knowledge on causes, development and spread of damages due to biotic or abiotic genesis on plants from the fields of agriculture and silviculture, including horticulture.

This positions them to professionally diagnose emerging plant damage, develop ecologically and economically appropriate problem solving for the maintenance of good health of agricultural crops and put developments and applications for preventative and monitoring counteractive measures into effect.

They can make good use of their skills that were taught in the framework of courses on biology and diagnostics of pathogen and parasitical organisms as well as weeds and their molecular genetics, physiological and ecological interdependencies with their host plants. They are proficient in the scientific foundations and the practical aspects of pest management and plant protection measures, their ecological and economic effects and the legal basis in the fields of plant and environmental protection.

Future graduates should be particularly qualified for problem-solving skills in the area of phytomedicine which offers them a favoured access to existing and future fields of work research, administration and economy.

1b) Professional Qualifications

The subject-specific and interdisciplinary orientation of the Master programme Phytomedicine enables the graduates to apply their knowledge in the fields of industrial and university research, for counseling and acting as a surveyor in the public and private sector, for governmental and international plant protection agencies as well as in the field of development service. Graduates of the Master programme Phytomedicine are especially enabled to work in the following fields of work:

- Leading and / or professional function in establishments of public research and teaching on plant diseases, pests and plant protection
- Industrial research and development In the field of plant and stored products

protection
- Industrial counseling and sales In the field of plant and stored products protection
- Counseling in agriculture and forestry pest management
- Special administrative office work in Chambers for Agriculture and ministries
- Working as an evaluator
- Arbory and wood maintenance
- Development aid
- Information technology

§ 2 ADMISSION REQUIREMENTS

Graduates of the Bachelor programmes in Agricultural Sciences (H 255), Forest Sciences (H225) and Viticulture, Enology and Wine Economics (H298) offered by BOKU University of Natural Resources and Life Sciences, or professionally equivalent Bachelor programmes of accredited national or international universities, as well as graduates of Bachelor programmes in Biology and Horticultural Sciences are eligible for admission with no further requirements.

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

1. Knowledge of basic subjects on natural sciences (physics, chemistry, mathematics and statistics) with a certificate of a total of at least 10 completed ECTS points for these subjects.

2. Knowledge of central subjects of biology (zoology, botany, micro biology, genetics, molecular biology, ecology) and of agricultural sciences and forestry with a certificate of a total of at least 50 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:	41 ECTS credits, including
Master's seminar:	2 ECTS credits
Master's Thesis:	30 ECTS credits
Elective courses:	37 ECTS credits
Foreign language-taught courses*):	12 ECTS credits Free
electives:	12 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 12 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.)

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 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 programme can only be admitted to the courses if further spaces are left on the course!) The admission of students enrolled in the Master programme is conducted according to the following order of required courses by the students: compulsory course, elective course, free elective course.

§ 4 COMPULSORY COURSES

The following compulsory courses worth a total of 41 ECTS credits, including 2 ECTS credits for the Master's seminar, are required to complete the Master programme:

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 2023/24
4) Courses only offered in uneven years (e.g. 2021/22, 2023/24)
5) Courses only offered in even years (e.g. 2020/21, 2022/23)

Course Number	Compulsory Courses	Course Type	Semester	ECTS Credits
	Course Title			
953303	Parasitologyand pathologyof crop plants	VO	WS	3
916315	Parasitologyand pathologyof forest trees	VO	WS	3
916318	Experimental phytopathology	VU	WS	3
916316	Lab course entomology	VU	SS	3
953327	Laboratorydiagnosis of plant damages[1]	UE	WS	3
953305	Agricultural pest diagnostics	UX	SS	3
916313	Diagnosis of biotic and abiotic damage of forest trees	VU	SS	3
953340	Biological and biotechnical plant protection	VU	SS	3
953318	Gene technology for plant pathologists[1]	VO	WS	3
953328	Principles and methods in weed control	VX	WS	3
953329	Chemistryand application of pesticides	VX	WS	3
911305	Environmental Toxicology	VO	WS	3
736321	Legislation in environmental and plant protection affairs	VO	WS	3
	Master's seminar	SE	WS or SS	2

§ 5 ELECTIVE COURSES

Elective courses worth a total of 37 ECTS credits are required to complete the Master programme. From each of the three elective course fields courses to an extent of at least 6 ECTS have to be chosen.

Course Number	Molecular Biology – Plant Biotechnology	Course Type	Semester	ECTS Credits
	Course Title			
790383	Bioinformatics: Selected aspects[1]	VU	WS or SS	3
916306	Methods in the use of genetic markers and their applications[1, 5]	VU	WS	3
916309	Genetics aspects in entomology[1]	VU	WS	3
941329	Molecular mechanisms of fungal virulence and plant resistance[1]	SE	SS	2
957325	Molecular plant breeding[1]	VO	WS	3
957329	Molecular plant breeding practical[1]	UE	WS	4
941328	Molecular phytopathology[1]	VU	SS	4
941305	Molecular biologyof plant-pathogen interactions[1]	VO	SS	3
790327	Practical course in plant biotechnology[1]	UE	SS	4,5
911314	Molecular microbial ecologyof soils[1]	VU	SS	3
953322	Plant virology and bacteriology[1]	VU	WS	3
953315	Phytopharmacology	VU	SS	3
931307	Technologyassessment for agriculture	VS	SS	3
916321	Transgenic organisms in pest management[2]	VO	WS	3
916322	Transgenic organisms in pest management[2]	SE	SS	1,5

Course Number	Analysis – Methods - Diagnosis	Course Type	Semester	ECTS Credits
	Course Title			
731389	Agricultural journalism	VS	WS	3
970301	Analysis of bio-hazards in foods[1]	VU	WS or SS	3
874307	Tree biology, tree control and arboriculture	VS	SS	4,5
911333	Soil microbiology course[1]	UE	SS	4
912317	Air pollution effects on forest ecosystems[1]	VS	WS	3
732311	Public relations - fundamental rules and conception	VU	WS	3
835305	Mathematical modelling in life sciences	VU	SS	3
831302	Methods of measuring stress resistance in plants[1]	VU	SS	3
814303	Environmental physics measurement methods of the soil-plant atmosphere	VO	SS	3

731373	Principles of qualitative approaches in the social sciences	VS	WS	3
857320	Remote sensing and GIS in natural resource management[1]	UE	WS	3
857321	Remote sensing and GIS in natural resource management[1]	VO	WS	3
851301	Experimental design	VO	WS	3
851302	Experimental design - lab	UE	WS	3
831313	Water relations of plants[1]	VO	WS	3
958339	Physiological disorders of grapevine[1]	VU	SS	1,5

Course Number	**Integrated and Biological Plant Protection**	**Course Type**	**Semester**	**ECTS Credits**
	Course Title			
814304	Agrometeorology[1]	VO	WS	3
953313	Current plant protection issues	SE	WS	3
916329	Tree diseases in urban areas and cultural landscapes	VO	WS	3
953336	Global change and pest management[1]	VO	WS	3
916303	Routines in forest protection	VO	SS	2
953312	Integrated and biological pest management in horticultural crops	VU	SS	3
953335	Phytomedicine in pomology[1]	VU	SS	3
953337	Introduction in the toxicology of pesticides[1]	VU	SS	3
916328	Ecological measures in forest protection	VX	WS	4,5
953316	Phytopathology	VS	WS	3
953153	Phytopathologyin horticulture[5]	VU	WS	3
953309	Plant nematology[1]	VU	WS	1,5
953331	Soil-borne pathogenes and symbionts	VU	SS	3
831311	Biologyand ecologyof weeds	VO	WS	3
953314	Protection of stored crops	VX	SS	3
916312	Advanced forest entomology& pathology	UX	SS	3
953334	Plant pathologyin viticulture	VU	WS	3

§ 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.

§ 7 COMPULSORY INTERNSHIP

For this Master programme 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 electives 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 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 and shall be selected from one of the subjects of the Master programme. 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 Phytomedicine 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 Phytomedicine are awarded the academic title Diplom-Ingenieur (m) or Diplom-Ingenieurin (f), abbreviated as Dipl.-Ing./ Dipl.-Ing.in or DI/DIin alternatively. 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).

§ 11 EXAMINATION REGULATIONS

(1) The Master programme in Phytomedicine 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 41 ECTS credits (§ 4)
- positive completion of the Master's seminar worth a total of 2 ECTS credits (§ 4)
- positive completion of elective courses worth a total of 37 ECTS credits (§ 5)
- positive completion of free electives worth a total of 12 ECTS credits (§ 6)
- positive completion of foreign language-taught courses worth a total of 12 ECTS credits
- 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.

(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 examination 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 PROVISIONS

Students who have not completed the formerly effective Master's curriculum in Phytomedicine (UH 066 422) 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 2023.

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.

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.

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.

Lecture/Seminar (VS)
Lecture/Lab (VU)
Lecture/Field Trip (VX)
Seminar/Field Trip (SX)
Lab/Seminar (US)
Lab/Field Trip (UX)