Universität für Bodenkultur Wien

University of Natural Resources and Life Sciences, Vienna

Curriculum

for the Master's Programme in

European Master in Animal Breeding and Genetics

and the international Master's Programme

European Master in Animal Biodiversity and Genomics

Programme classification no. 066 450

Effective date: October 1st, 2025

TABLE OF CONTENTS

§ 1 QUALIFICATION PROFILE

The master's programme in European Master in Animal Breeding and Genetics and the international European Master in Animal Biodiversity and Genomics are degree programmes which serve 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

After completion of the master's programme in European Master in Animal Breeding and Genetics, or the international European Master in Animal Biodiversity and Genomics, graduates will be able to:

- Describe the current world context of animal breeding, animal biodiversity, and reflect on its social and ethical aspects.
- Show knowledge of biostatistics, quantitative and molecular genetics and use correct scientific vocabulary.
- Identify and analyse key factors and forces behind animal breeding and biodiversity problems and relate their own discipline to a multidisciplinary framework.
- Create a solution for a given problem by applying appropriate research methods, instruments and tools and organise, monitor and evaluate results within their specialisation, while
    - collecting relevant information and literature,
    - understanding and applying required methods to conduct research,
    - reflecting critically on own and literature research work and adjusting and suggesting improvement of the analysis and
    - concluding and pointing out practical recommendations based on analysis of results.
- Present an oral and written report of study and research activities, considering the nature of the audience.
- Adapt and apply their knowledge to different working and cultural environments.
- Demonstrate the learning and organisational skills to continue to study in a manner that may be largely self-directed or autonomous.
- Operate in an international context in both content and social-cultural aspects, both independently and in a team.

1b) Professional qualifications

The objective of the European Master in Animal Breeding and Genetics and the international European Master in Animal Biodiversity and Genomics is to train and educate students on a high level, with the primary focus on theoretic background and current research practices. Consequently, the graduates will be well fitted to pursue follow up qualifications within the academia, such as doctoral studies at BOKU or elsewhere. Graduates of the both master's programmes will be also well suited to fill advanced level positions in breeding companies, organizations

aimed at safekeeping animal biodiversity, breeding organisations or in other parts of the animal breeding industry, acting as geneticists or consultants.

§ 2 ADMISSION REQUIREMENTS

Graduates of the bachelor's programmes in Agricultural Sciences offered by University of Natural Resources and Life Sciences, Vienna and Equine Sciences offered by University of Veterinary Medicine, Vienna in cooperation with University of Natural Resources and Life Sciences, Vienna are eligible for admission with no further requirements.

For graduates of other bachelor's programmes, mastery of the following learning outcomes is required for admission:

- Knowledge and skills in the basics of agricultural sciences, i.e. chemistry, physics, mathematics or statistics, zoology or anatomy and physiology of farm animals, botany, microbiology, genetics and economics.
- Knowledge and skills in the basics of animal production, i.e. animal breeding, animal nutrition, animal husbandry, crop production or pasture management.

In addition, knowledge of English at level B2 (Common European Framework of Reference for Languages) is required. Equivalent tests are the following:

- TOEFL - paper based at least 575 points, computer based at least 233 or internet based at least 90
- IELTS - minimum score of 6.0
- TOEIC - at least 785 points
- Certificate in Advanced English (CAE)
- Certificate of Proficiency in English (CPE)
- Completion of a study programme that was entirely taught in English from countries with English as the official language.

§ 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 official language of the study programme is English.

Mobility track 1: National degree

Students conduct their entire studies at BOKU. An international mobility is recommended.

For Mobility track 1 (National degree), the programme is divided into

Compulsory courses:	21 ECTS credits including
Master´s thesis seminar	2 ECTS credits
Master's thesis:	30 ECTS credits
Elective courses:	51 ECTS credits
Free electives:	18 ECTS credits

Mobility track 2: International Master Programme

The Mobility track 2 follows the framework of the accepted "European Master in Animal Biodiversity and Genomics" Erasmus Mundus Joint Master (EMJM) programme. For the purposes of the Mobility track 2, the partner universities of the EMABG programme are: University of Natural Resources and Life Sciences, Vienna (BOKU), Wageningen University (WU), Institut des sciences et industries du vivant et de l'environnement (APT), Norwegian University of Life Sciences (NMBU), Swedish University of Agricultural Sciences (SLU) and Georg-August-Universität Göttingen (UGOE). The structure of studies within the International EMABG Master Programme is shown in Figure 1. Any ECTS credits acquired during an international mobility will be counted towards the pool of compulsory, elective or free elective course, depending on the content overlap.

For Mobility track 2 (International Master Programme), the ECTS structure at BOKU is

Compulsory courses:	21 ECTS credits
Elective courses:	32 ECTS credits
Free electives:	7 ECTS credits

The remaining 60 ECTS to the total of 120 ECTS required to complete the Master studies should be acquired at a partner university of the European Master in Animal Biodiversity and Genomics master's programme.

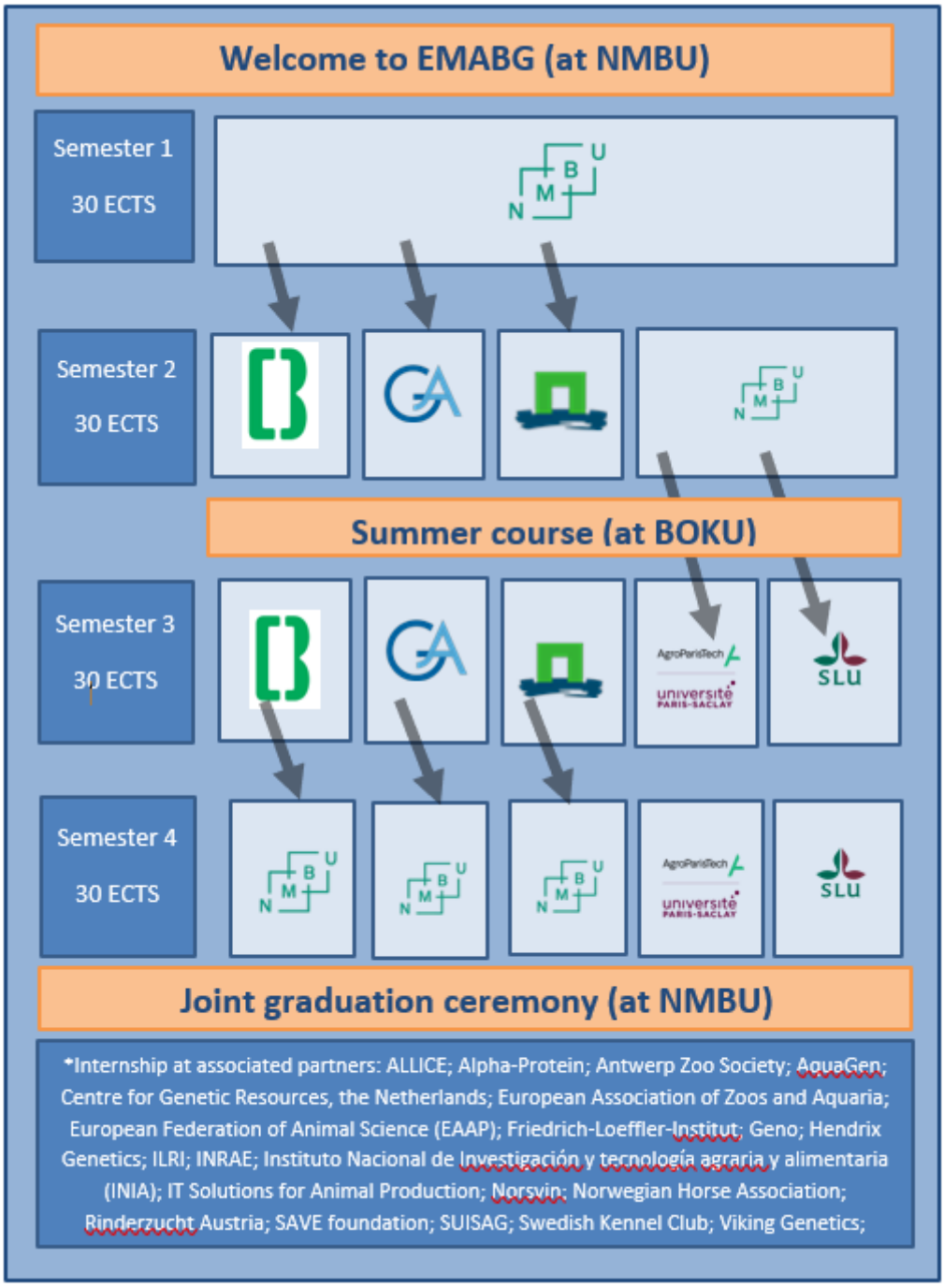

Figure 1: Structure of the European Master in Animal Biodiversity and Genomics International Master Programme

Students following Mobility track 2 will start their studies with a welcome course and the first semester at NMBU, Norway. In the second or third semester, the students will move to a different partner university, and follow one of the study tracks:

- WU: Conservation genomics for rare and endangered breeds and species
- BOKU: Designing and implementing breeding programmes for small populations
- SLU: Bioinformatics applied to biodiversity and genomics
- UGOE: One health: Health and welfare in humans and animals

- APT: Understanding biodiversity: integrative biology

A summer course will take place between semester 2 and semester 3 at BOKU.

The thesis work is done under joint supervision by the 2 degree-awarding universities hosting the student.

3b) Three-pillar principle

The three-pillar principle is the central identifying characteristics of both the bachelor's and master's programmes offered at the University of Natural Resources and Life Sciences, Vienna. In the master's 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's course is authorized to first admit students enrolled in the master´s programme. This means that students enrolled in a bachelor study programme can only be admitted to the courses if further places are available. The admission of students enrolled in the master study programme follows the order of required courses by the students: compulsory course > elective course > free elective.

§ 4 COMPULSORY COURSES

Mobility track 1: National degree

The following compulsory courses are required to complete Mobility track 1 (National degree) of the master's programme:

Subject	Course type	ECTS-credits
Course title		
Applied statistical methods in livestock sciences	VU	7
Genetics of diversity	VO	3
Quantitative animal genetics	VO	6
Molecular animal genetics	VO	3
Master's thesis seminar	SE	2

Mobility track 2: International Master Programme

The following compulsory courses are required to complete Mobility track 2 (International Master Programme) of the master's programme:

Subject	Course type	ECTS-credits
Course title		
Genetics of diversity	VO	3
Animal breeding and the sustainable development goals	PJ	3
Transformative development	VS	3
Animal husbandry in tropical and subtropical regions	VO	3
Project design and sustainable development goals (SDGs)	VS	3
Scientific communication and impacts	VS	3
Contribution of animal breeding to global food security	VS	3

The additional courses appear as compulsory in Mobility track 2 (International Master Programme) due to the involvement of BOKU in the study track "Designing and implementing breeding programmes for small populations".

§ 5 ELECTIVE COURSES

Elective courses worth a total of 51 ECTS credits for Mobility track 1 (National degree) and a total of 32 ECTS credits for Mobility track 2 (International Master Programme) are required to complete the master's programme. Courses listed as compulsory (see § 4) for a mobility track can not be chosen as elective for that track.

Subjects	**Course type**	**ECTS credits**
Course title		
Project design and sustainable development goals (SDGs)	VS	3
Applied statistical methods in livestock sciences	VU	7
Quantitative animal genetics	VO	6
Molecular animal genetics	VO	3
Scientific communication and impacts	VS	3
Sustainable land use in developing countries	VO	3
Livelihood system dynamics in rural development	VS	3
Facilitating change for sustainable development	VS	6
Participatory methods in development research and practice	SE	3
Animal husbandry in tropical and subtropical regions	VO	3
Contribution of animal breeding to global food security	VS	3
Modern bioinformatics	VS	2
Bioinformatics: Selected aspects	VU	3
Statistical data analysis using SAS	VU	2
Using bioinformatics for expression profiling by Next Generation Sequencing	VU	2

Research practice in animal and plant breeding and genetics	VS	15
Paper discussion animal breeding and genetics	VS	3
Scientific methods and writing skills	VS	1
Animal production systems	SE	6
Animal production in organic agriculture	VO	4
Structure and analysis of genomes	VO	3
Molecular plant breeding	VO	3
Molecular plant breeding practical	UE	4
Internship - Animal breeding and genetics	PP	6
Animal breeding and the sustainable development goals	PJ	3
Gender, food systems and natural resources	VS	6
Gender, nutrition and right to food	VS	6

§ 6 FREE ELECTIVES

For Mobility track 1 (National degree) free electives worth a total of 18 ECTS credits and for Mobility track 2 (International Master Programme) free electives worth a total of 7 ECTS credits are required to complete the master's 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.

§ 7 MASTER'S THESIS

A master's thesis is a paper on a scientific topic, to be written as part of a master's degree programme (for exceptions please see the By Laws (Satzung) 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 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 English. Languages other than English are permissible only if approved and confirmed by the master's thesis supervisor for Mobility track 1, or the master's thesis supervisor and co-supervisor for Mobility track 2. The thesis defensio must be held in English regardless of the language of the thesis.

The master's thesis is worth a total of 30 ECTS credits and for Mobility track 2 it is supervised both by a competent professional person at one of the two degree-awarding partner universities and a second competent professional person at the other degree-awarding university.

§ 8 COMPLETION OF THE MASTER'S PROGRAMME

The master's programme in European Master in Animal Breeding and Genetics or the international European Master in Animal Biodiversity and Genomics has been completed when the student has passed all required courses and received a positive grade on the master's thesis and defensio.

§ 9 ACADEMIC DEGREE

Graduates of the master's programme in European Master in Animal Breeding and Genetics, or the international European Master in Animal Biodiversity and Genomics are awarded the academic title Master of Science, abbreviated as MSc or M.Sc. The academic degree MSc (M.Sc.), if used, shall follow the bearer's name (§ 88 [2] UG 2002 BGBl. I no. 81/2009).

§ 10 EXAMINATION REGULATIONS

(1) The master's programme in European Master in Animal Breeding and Genetics, or the international European Master in Animal Biodiversity and Genomics has been completed successfully when the following requirements have been met:

- positive completion of the compulsory courses worth a total of 21 ECTS credits for Mobility track 1 (National degree) or 21 ECTS for Mobility track 2 (International Master Programme) (§ 4)
- positive completion of elective courses worth a total of 51 ECTS credits for Mobility track 1 (National degree), or 32 ECTS for Mobility track 2 (International Master Programme) (§ 5)
- positive completion of free electives worth a total of 18 ECTS credits for Mobility track 1 (National degree) or 7 ECTS credits for Mobility track 2 (International Master Programme) (§ 6)
- a positive grade on the master's thesis and the defensio

For mobility track 2 (International Master Programme): positive completion of courses worth a total of 30 ECTS credits at a partner university(2) Student evaluation takes the form of course and module 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/module.

(3) Student evaluation in modules: Module evaluation is based on the grades given the students in the individual courses that make up the module. The total evaluation for the module is calculated as the average of the grades of all module courses, weighted by ECTS credits. Average values of .5 or lower are rounded to the better (numerically lower) grade; values of over .5 are rounded to the worse (numerically higher) grade. If deemed necessary, the Dean of Students may require a module examination at his/her discretion.

(4) 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 (SE) and project-based courses (PJ) 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.

(5) After the successful completion of all the courses and examinations required in the master's programme, the completed master's thesis, after it has been given a positive evaluation by the thesis supervisor for Mobility track 1, or the thesis supervisor and co-supervisor for Mobility track 2, shall be publically presented by the student and defended in the form of an academic discussion (defensio). The committee shall consist of a committee chair and two additional university teachers with a venia docendi or equivalent qualification. The student's total performance (thesis and defensio) will be assigned a comprehensive grade. Both thesis and defensio must receive a passing grade for the student to complete the programme. The written evaluations stating the rationale for the thesis grade and the defensio grade are included in calculating the comprehensive grade and are documented separately.

The comprehensive grade is calculated as follows:

- Master's thesis: 70%
- Defensio (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). Students need to additionally fulfill the distinction criteria of both universities that they have attended during their studies.

§ 11 TRANSITIONAL PROVISIONS

For students continuing their studies under the provisions of the previously valid curriculum, the list of equivalent courses (*Äquivalenzliste*) pursuant to a resolution of the Academic Programme Committee (*Studienkommission*) applies. This list includes all courses that correspond to courses offered in the previously valid curriculum.

For students who switch to the new master's programme curriculum, examinations for courses taken under the provisions of the previously valid curriculum shall be recognized towards the new programme under the provisions of this curriculum based on the list of equivalent courses.

§ 12 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.

Exercise course (UE)
Exercise 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 characterised by problem-based learning. Under instruction, students work - preferably in small groups - on case studies, applying appropriate scientific methods.

Lecture and seminar (VS)
Lecture and exercise (VU)
Lecture and field trip (VX)
Seminar and field trip (SX)
Exercise and seminar (US)
Exercise and field trip (UX)