vetmeduni

Veterinärmedizinische Universität Wien

Master's Programme in Comparative Biomedicine

Tumour Signalling Pathways and Infection Biomedicine

Study plan 2015

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1. General Provisions

1.1. Legal Basis

The legal basis for the Master's programme "Comparative Biomedicine" is the University Act 2002 (UG 2002).

1.2. Qualification Profile

1.2.1. General Qualifications

The Vetmeduni Vienna offers an English-language, research-oriented Master's programme that prepares students for careers in basic and applied research in academic and industrial settings, as well as for regulatory and administrative roles in the life sciences. Graduates are also qualified to pursue a subsequent PhD programme.

This interdisciplinary programme focuses on infectious and neoplastic diseases, which pose major challenges to healthcare systems, not least in light of the impending consequences of demographic change. The programme has been designed in line with the latest research to train urgently needed specialists for these challenges. Students are trained in diagnosis, disease research, development of new therapeutics, disease management, and the application of innovative therapies.

The programme imparts an understanding of the underlying molecular and cellular mechanisms and involves the use and development of model organisms to elucidate complex biological interactions. The curriculum provides not only a solid overview of the latest bioanalytical methods, including omics and imaging technologies, but also equips students with the skills for competent bioinformatic analysis of these data. Students participate in team-based and independent laboratory work within research projects, culminating in the ability to conduct and critically evaluate experimental research. In addition, the programme develops competencies in project formulation, scientific writing, and participation in public scientific discourse.

1.2.2. Employment Fields

On the basis of their training, graduates of the Master's programme are qualified to assume leadership roles in particular in the following areas:

- Research institutions in the pharmaceutical and biomedical industries
  - Product development and research in the biomedical field
  - Universities and other post-secondary educational institutions
- Non-university research institutions
- Specialist testing and analytical institutions in the public and private sectors
- Public and private healthcare institutions

1.2.3. Subject-Specific and Transferable Skills are Acquired in the Following Areas:

- Biology of tumours and infections
- Immunology and molecular host–pathogen interactions
- Functional genetics, genomics, and epigenomics
- Bioinformatics and biostatistics
- Comparative medicine in an evolutionary context
- Animal models in inflammation, infection, and neoplastic disease
- Molecular and personalised precision therapy
- Molecular bioanalytics
- Laboratory animal medicine

1.2.4. International Orientation

The Master's programme is structured and organised in accordance with international standards; the recognition of appropriate academic achievements is ensured through the application of the ECTS system. The language of instruction is English, and the Master's thesis is written in English.

Electives, internships, and the Master's thesis may also be completed at other national or international universities and research institutions.

1.3. Structure, Workload, and Duration of the Programme

The Master's programme is modular in design. After successfully completing the courses of the first academic year, students may choose between two practice-oriented modules ("Tumour Signalling Pathways" and "Infectious Biomedicine").

The Master's programme comprises a total of 4 semesters, including courses (compulsory and elective, including examinations) amounting to 71 ECTS credits. In addition to coursework, students must complete internships amounting to at least 8 weeks, an advanced methodological training (technology training) of 2 weeks, and a scientific Master's thesis.

1.4. Admission Requirements for the Master's Programme "Comparative Biomedicine"

Pursuant to § 64(5) UG 2002, admission to the Master's programme "Comparative Biomedicine" requires the completion of a discipline-specific university or university of applied sciences degree comprising at least 180 ECTS credits.

2. Modes of Instruction and Teaching Formats

2.1. Semester Hours

The scope of lectures and other courses is indicated in semester hours (SSt) and ECTS credit points. Based on a semester length of 15 weeks, one semester hour corresponds to 15 academic hours of 45 minutes each.

2.2. Forms of Instruction

Conversatoria (KV) serve to acquire knowledge through appropriately guided, competent discussion, as well as to train problem-solving skills. Conversatoria are courses with continuous assessment, with particular emphasis on ongoing participation.

Seminars (SE) serve scientific discussion. Active student participation is required; in small groups, students primarily learn to apply knowledge to the analysis and solution of questions. Oral and/or written contributions are expected from participants.

Exercises (UE) serve the acquisition of practical abilities and specialised skills relevant to professional careers.

Practical course (PA) involves working on a small sub-area of a scientific question under the guidance and supervision of the course instructor. A regular summary of progress is typically expected.

Technology Training (TT) is advanced methodological training in a scientific method. The method learned through intensive practice should enable students to efficiently address the scientific questions pursued in their Master's thesis.

2.3. Forms of Examination

Course examinations are administered at the end of a course and may be conducted in writing or orally. Courses with continuous assessment (conversatoria, seminars, exercises) are characterised by regular evaluation of knowledge during instruction.

Subject examinations cover individual subjects. Comprehensive examinations cover multiple subjects.

2.4. Master's Thesis

Students are required to write a Master's thesis.

The topic of the thesis must be drawn from one of the examination subjects specified in the curriculum.

Students are entitled to propose a topic or to choose a topic from among proposals offered by the available supervisors.

The assignment must be structured to be reasonably completable by a student within one semester.

2.5. ECTS Credits

The European Credit Transfer System (ECTS) facilitates the recognition of academic achievements between universities and within Europe. ECTS credit points are allocated to each course according to the workload required of students (both in class and in independent study). ECTS points must also be allocated for practical training and the Master's thesis.

For a two-year Master's programme, ECTS provides for the allocation of 120 credits.

For lecture courses with end-of-course examinations and for courses with continuous assessment, ECTS credits are listed separately. If a course with continuous assessment is part of the courses for an examination subject, the credits allocated to that course are included in the total credits for that subject.

ECTS credits are distributed as follows among compulsory subjects (including examinations), elective subjects, practical training, and the Master's thesis (including the Master's examination):

Mandatory courses	Electives	Internship	Technology Training	Thesis	Total
59	12	15	4	30	120

2.6. Language of Instruction

The language of instruction in the Master's programme is English. This is intended to support and facilitate the programme's openness to international students in the spirit of the Bologna Process.

3. The Master's Programme

3.1. Workload

Across the four semesters of the Master's programme, courses amounting to 71 ECTS credits are scheduled. In addition, an eight-week compulsory internship and a two-week technology training must be completed. A Master's thesis must also be prepared.

3.2. Recommended Semester Plan

1. Semester						
	Academic Hours					
Title	VO	KV	SE	UE	SSt	ECTS
Proliferation & Differentiation		2			2	**2**
Celldeath		1			1	**1**
Immunity and Infection		3			3	**3**
Angiogenesis & Haematopoesis		2			2	**2**
Metabolism		2			2	**2**

Stem cells	1		1	**1**
Invertebrate Biomodels	1		1	**2**
Vertebrate Biomodels	2		2	**2**
Darwinian Medicine	2		2	**3**
Comparative Genome analysis	2		2	**3**
Statistical Design of Experiments	1		1	**1**
Analysis of high-throughput data I	2		2	**2**
Exam 4.1.1				**2**
Electives				**4**
Total	**21**		**21**	**30**

2. Semester						
	Academic Hours					
Title	**VO**	**KV**	**SE**	**UE**	**SSt**	**ECTS**
Analysis of high-throughput data II		2			2	**2**
Applied Bioinformatics		1		2	3	**4**
Bioanalysis in Cancer and Infection		4			4	**4**
Module Tumour signaing						
Tumourbiology		1			1	**1**
Functional Tumor Genomics		2	1		3	**3**
Animal models in cancer research		2			2	**2**
New Approaches to Cancer Treatment		2			2	**2**
Module Infectionsbiomedicine						
Infectionsbiology		5			5	**5**
Functional Genomics of Host-Pathogen Interactions		1			1	**1**
Animal Models in Infection Research		1			1	**1**

New Therapeutic Approaches in Infectious Diseases	1			1	**1**
Exam 4.1.2					**2**
Exam 4.1.3					**2**
Total	**21**	**2**	**2**	**25**	**30**

3. and 4. Semester						
	Academic Hours					
Title	**VO**	**KV**	**SE**	**UE**	**SSt**	**ECTS**
Eight Weeks Internship						**15**
Two Weeks Technology Training						**4**
Scientific Writing		1		1	2	**2**
Applied Biomedical Economics		1			1	**1**
Electives						**8**
Master's examination (4.1.4)						**3**
Master's Thesis						**27**
Total		**1**		**2**	**3**	**60**

4. Examination Regulations for the Master's Programme

4.1. Examination Subjects

4.1.1. One comprehensive written examination covering the courses of the first semester

4.1.2. One comprehensive written examination covering the courses of the module "Tumour Signalling Pathways"

4.1.3. One comprehensive written examination covering the courses of the module "Infectious Biomedicine"

4.1.4. One oral Master's examination in the subject area of the Master's thesis

4.2. Prerequisites for Admission to Courses and Examinations

Successful completion of the examinations listed under 4.1.1–4.1.3 is a prerequisite for commencing the Master's thesis.

5. Internship

The internship and the technology training are to be completed in the 3rd semester and comprise a total of 8 and 2 weeks respectively. Internships may be completed at the University of Veterinary Medicine Vienna, at other universities, or with external specialist institutions (testing/inspection agencies; private companies). Proof of completion shall be provided by a confirmation from the institution(s) at which the internship was undertaken.

6. Master's Thesis

The Master's thesis may be submitted after completion of the examinations referred to in 4.1.1 to 4.1.3. The thesis must be written in English and should address a topic from the subjects taught in the programme.

The Master's thesis shall either comprise a written work of 50 to 100 A4 pages or a work suitable for submission to a scientific journal.

It is recommended that the knowledge gained during the internship completed as part of the programme be incorporated into the Master's thesis, expanded, and critically evaluated.

Assessment is given in the form of grades from 1 (very good) to 5 (insufficient).

7. Completion of the Master's Programme

Upon completion of the compulsory courses (or duly recognised equivalent external courses) and the positive assessment of the Master's thesis, the programme is deemed completed. Completion is certified to the students.

Graduates are entitled to use the academic title Master of Science (MSc).

The completed Master's programme "Comparative Biomedicine" entitles graduates to undertake a doctoral or PhD programme and qualifies them for leadership positions in one of the professional fields listed under 1.2.

8. Entry into Force

This curriculum enters into force on 1 October 2016.