Infection Biology

Specialized Master’s degree program

Master of Science: M Sc in Infection Biology

Curriculum

The Specialized Master’s degree program in Infection Biology at the University of Basel is run by the Swiss Tropical and Public Health Institute (Swiss TPH), an internationally recognized center for public health excellence. Infection biology focuses on host-pathogen interactions and aims to understand the mechanisms through which viruses, bacteria, fungi or parasites colonise their hosts and cause disease. Infection biologists study molecular, cellular, metabolic or immunological aspects of pathogen biology and infection, try to elucidate mechanisms and evolution of drug resistance and immune evasion, or investigate dynamics of transmission and infection in the field. Knowledge gained from studying these and other aspects of infection biology provides the basis for the development of novel diagnostic tools, drugs and vaccines for improved prevention and treatment of infectious diseases.

Focal area of teaching and research

The main goals of the MSc course in Infection Biology are the following:

- To understand the phenomenon of infection from a molecular, immunological and cell-biological viewpoint.
- To understand host-parasite interactions and be able to suggest control measures.
- To understand basic concepts in bioinformatics and acquire skills for computational data analyses.
- To have a good understanding of molecular, cellular and epidemiological methods for the analysis of host-parasite interactions.
- To be able to plan and carry out laboratory experiments in order to address a scientific hypothesis, to analyze the results and to report them orally and in writing.
- To obtain an overview on the current research literature in areas of infectious diseases.

The major pathogens studied in the research laboratories at Swiss TPH include *Plasmodium* parasites (malaria), African trypanosomes (sleeping sickness), *Mycobacterium tuberculosis*, *Mycobacterium ulcerans* (Buruli ulcer) and various parasitic worms (helminthic diseases).
**Course structure**

**Master studies**

The Master of Science degree is a postgraduate degree that requires a successfully completed Bachelor’s program. The Specialized Master’s degree program Infection Biology awards 90 ECTS credits and is a so called “mono-course” consisting of only one core subject. Supervised practical work over the course of one year constitutes the core of the studies.

<table>
<thead>
<tr>
<th>Curriculum master studies</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specialized Master’s degree program Infection Biology</strong></td>
<td></td>
</tr>
<tr>
<td>Master’s thesis</td>
<td>50</td>
</tr>
<tr>
<td>Master’s examination</td>
<td>10</td>
</tr>
<tr>
<td>In-depth professional studies</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>90</td>
</tr>
</tbody>
</table>

One ECTS credit point roughly equals 30 hours of study.

**Course language**

The language of instruction is English. The Master’s thesis is to be written in English.

**Exams**

Student performance is assessed through course accompanying certificates, proof of course participation according to study contracts, a Master's thesis and through a Master's examination.

**Language stays / Internships**

No language stays or internships are required.

**Combination of subjects**

The degree programs at the Faculty of Science are generally mono-courses with the possible addition of an in-depth subject and an elective subject. The Specialized Master’s degree program Infection Biology includes an elective subject; however, no other subjects are required.

It is possible to study biology in combination with a second subject from the Faculty of Humanities or the sports sciences (see UNI INFO “Biologie - ausserfakultäres Fach”).

The professional exam for the teaching diploma for secondary schools requires a Master’s degree in one or two subjects (i.e. biology). At least one of the two subjects has to be successfully completed at a Master’s level. For the second subject at least 90 ECTS credits have to be awarded in consultation with the University of Applied Sciences and Arts Northwestern Switzerland (FHNW) and the teaching commission of the respective subject. The mandatory courses in biology are stated in an information sheet which can be obtained from the Studies Secretariat Biology.

**Start of program**

The program begins in the fall semester.

**Duration of study**

The Master’s program takes three semesters. There are no restrictions on the duration of study.
Further degrees

Teaching diploma for secondary schools

The teaching diploma enables teaching within the general school system at the Secondary Level II and is based on the academic degree at Master’s level of a university in one or two subjects. In addition, two semesters of vocational training at the school for teacher education at FHNW have to be completed. The diploma does not require a Master's degree in a second subject; however, a second Master’s degree may improve future career options. Details are to be found in UNI INFO «Lehrdiplom für Maturitätsschulen».

Also see: www.fhnw.ch/ph > Studium > Diplom Sekundarstufe II

Doctorate

A Master’s degree in Infection Biology builds the basis for doctoral studies (PhD) in the Life Sciences including biochemistry, biophysics, botany, computational biology, genetics, microbiology, molecular biology, neurobiology, structural biology, cell biology or zoology. Transfaculty doctorates are possible in the fields of epidemiology, medical-biological research, pharmacology or the history of natural sciences.

The doctoral studies usually take three to four years and are completed with a written thesis and oral exam covering the postgraduate studies in the doctoral subject.

Career opportunities

Holders of a Master of Science in Infection Biology usually work in academia or industry in laboratory-oriented projects in the fields of basic or applied research, in the teaching/training or communication/documentation sectors or as scientific writers.

Admission

Master studies

The following degrees of a Swiss University allow for direct admission to the Specialized Master's degree program Infection Biology: Bachelor of Science (BSc) in Biology or BSc in Biochemistry or BSc in Medicine or BSc in Veterinary Medicine or BSc in Pharmaceutical Sciences; minimum average mark of 5.0 for all BSc degrees and basic knowledge in infection biology/microbiology of at least 4 CP are required.

Students with a BSc in a different branch will be assessed individually. Students with a BSc degree but insufficient mark can alternatively pass the GRE test in the area of “Quantitative Reasoning” or pass the GRE® subject test “Biochemistry, Cell and Molecular Biology” or pass the GRE® subject test “Biology” all with a score in the top 35 % (GRE = Graduate Record Examinations®).

BSc degrees from other Swiss or foreign universities are also eligible but have to be approved by the respective teaching committee of the Faculty of Science.

Further information and regulations can be found in the study regulation and the guidelines for the master’s degree program Infection Biology: www.bio.unibas.ch

Binding information under: http://www.unibas.ch/admission
Application Application under http://www.unibas.ch/application; the application fee amounts to CHF 100.-. Application deadline for the fall semester is April 30. Students of the University of Basel see: https://www.unibas.ch/de/Studium/Im-Studium/Rueckmelden/Masterstudium.html. Application deadline is published there.

Enrollment The letter of admission also informs students on the procedure of enrollment. In general, students with a Swiss educational background do not have to be present in person for enrollment.

Tuition fees Per semester:

Tuition fees (also for examination semesters) CHF 850.- Individual costs of living etc. are not included.

Scholarships and student loans Applications have to be sent to the responsible office of the canton in which the parents are eligible to pay tax.

Mobility Semesters abroad are possible and supported by scholarship programs. The mobility programs facilitate the stay at other Swiss or foreign universities. Further Information:
Student Exchange, Petersplatz 1, 4003 Basel, T +41 61 207 30 28, mobility@unibas.ch.

Further information Guidelines and regulations
- Ordnung für die Bachelor- und Masterstudiengänge an der Philosophisch-Naturwissenschaftlichen Fakultät der Universität Basel vom 05.12.2015
- Merkblatt zur Erlangung der fachwissenschaftlichen Anerkennung für das Lehrdiplom für Maturitätsschulen in Biologie (Lehrpersonen für die Sekundarstufe II) von Mai 2016
www.bio.unibas.ch/reglemente/

Information about the University of Basel
- The course directory can be found under: https://www.unibas.ch/en/Studies/Course-Directory.html
- A new edition of the “Basler Studienführer” was published in 2016: www.studienberatung.unibas.ch
- Website: www.unibas.ch

Student Advice
Questions regarding the study of Infection Biology can be discussed personally at the Student Administration Office of the Swiss Tropical and Public Health Institute (registration via e-mail or phone).
Contacts

Student Administration
Swiss Tropical and Public Health Institute
Mrs. Christine Mensch, Socinstrasse 57, 4002 Basel, Tel.: +41 (0)61 284 82 89
www.swisstph.ch
e-mail: christine.mensch@unibas.ch

Study Counselling Student Teaching (Head Teacher, Sek II)
Departement Umweltwissenschaften, Botanik und Ökologie
Hebelstrasse 1, 4056 Basel, T +41 61 207 23 26
www.duw.unibas.ch
e-mail: juerg.oetiker@unibas.ch

Dean’s Office of the Faculty of Science
Klingelbergstrasse 50, 4056 Basel, T +41 61 207 30 53
www.philnat.unibas.ch
e-mail: marianne.hess@unibas.ch

Office of the Dean of Studies of the Faculty of Science
Klingelbergstrasse 50, 4056 Basel, T +41 61 207 30 54
www.philnat.unibas.ch
e-mail: studiendekanat-philnat@unibas.ch

Student Administration Office of the University of Basel
Petersplatz 1, 4003 Basel, T +41 61 207 30 23
www.unibas.ch
Enquiries: www.unibas.ch/studseksupportEN

Student Advice Center Basel
Steinengraben 5, 4051 Basel, T +41 61 207 29 29/30
www.studienberatung.unibas.ch
e-mail: studienberatung@unibas.ch

Imprint

Editorial: Student Advice Center Basel. Edited by Dr. Nathalie Bucher in collaboration with Prof. Till Voss, Christine Mensch and Susan Kaderli, June 2017. © by Studienberatung Basel / subject to change.