

# **Study and Examination Regulations for the Master's Program in Biochemistry and Molecular Biology at the University of Potsdam**

**As of January 20, 2016**

The Faculty Committee of the Faculty of Science at the University of Potsdam has approved on January 20, 2016, the following degree and examination regulations on the basis of Article 19 Para 1 and 2, Article 22 Para 2, and Article 72 Para 2 (1) of the Brandenburg Higher Education Act of April 28, 2014 (Law and Ordinance Gazette [GVBl.] I/14, [no. 18]), last amended by Article 2 of the Act of July 1, 2015 (Law and Ordinance Gazette [GVBl.] I/15 [no. 18]) in combination with the Ordinance on the Design of Examination Regulations to Guarantee the Equivalency of Studies, Examinations, and Degrees (University Examination Ordinance - HSPV) of March 4, 2015 (GVBl. II/15 [no. 12]) in combination with Article 21 Para 2 (1) of the Basic Constitution of the University of Potsdam dated December 17, 2009 (Bulletin UP no. 4/2010, p. 60) in the third amended version of the Basic Constitution of the University of Potsdam (GrundO) of April 22, 2015 (Bulletin UP no. 6/2015, p. 235) and Article 1 Para 2 of the new version of the general study and examination regulations for master's degree programs at the University of Potsdam not related to teacher education of January 30, 2013 (BAMA-O) (Bulletin UP no. 3/2013, p. 35), last amended on February 26, 2014 (May 21, 35 Bulletin UP 3/2014, p. 35):<sup>1</sup>

Table of Contents

§ 1 Applicability

§ 2 Degree

§ 3 Objectives of Master's Program

§ 4 Admission Prerequisites; Application Periods and Documents

§ 5 Duration and Organization of Master's Program

§ 6 Modules and the Course of Study

§ 7 Master's Thesis

§ 8 Passes

§ 9 Weighting of Modules for Grading Purposes

§ 10 Application, Termination, and Transfer Regulations

Appendix 1: Module catalog

Appendix 2: Courses of study

## **§ 1 Applicability**

(1) These regulations apply to the Master's program in Biochemistry and Molecular Biology at the Uni-

---

<sup>1</sup> Approved by the President of the University of Potsdam on Xxxx XX, 2016.

versity of Potsdam. These discipline-specific regulations supplement the new version of the General Regulations for Study and Examinations for Bachelor's and Master's Degrees (not for teachers in training) at the University of Potsdam of January 30, 2013 (BAMA-O).

(2) In the event that these regulations contradict the BAMA-O, then the provisions in the BAMA-O supersede these regulations.

## **§ 2 Degree**

The Faculty of Science at the University of Potsdam awards the degree of "Master of Science" (abbreviated as "M.Sc.") to students who have completed the necessary credit points and graduation requirements.

## **§ 3 Objectives of Master's Program**

The Biochemistry and Molecular Biology Master's program builds upon the knowledge, skills, abilities, and methods acquired during the Bachelor's degree course.

The students:

- Are familiar with basic concepts in the state of science for the fields of biology, molecular biology, genetics, genomics, systems biology and biotechnology and possess detailed knowledge of the state of research and current research approaches in selected areas.
- Possess the foundations for self-sufficient scientific work in biochemistry, molecular biology, cell biology, or physiology.
- Can carry out activities and tasks in research departments of universities or extramural institutions, biotechnology or biomedicine companies, or teaching and education. Possible career areas especially include research and development, sales, management, administration, and politics.
- Possess personal and social skills in areas such as teamwork, conflict resolution, presenting, and scientific writing.

## **§ 4 Admission Prerequisites; Application Periods and Documents**

(1) The following special admission prerequisites apply to the Master's program in Biochemistry and Molecular Biology:

(a) An undergraduate academic degree in a discipline/program related to the Master's program, such as biology, biochemistry, biosciences, biotechnology, biomedicine, or bioinformatics totaling

180 credit points; academic degrees in related fields may be recognized provided they are equivalent or comparable.

(b) Proof of knowledge in molecular biology and biochemistry totaling at least 60 credit points. If the applicant's total number of demonstrable credit points is up to 4 fewer than the required 60 credit points, the Examining Board shall decide on a case-by-case basis whether the applicant meets the prerequisites despite the missing credit points.

(c) English-language skills that correspond at least to Level B2 of the European Framework for Languages. Article 4 Para 2 of ZulO governs the specifics. The Examining Board issues decisions regarding credentials on a case-by-case basis.

(2) Applicants whose native language is not German must demonstrate sufficient German skills corresponding to Level A2 of the European Framework for Languages.

(3) The application for the Master's program in Biochemistry and Molecular Biology, when matriculating as of the first semester, can begin in either the winter or summer semester. The application for the Master's program in Biochemistry and Molecular Biology, when matriculating as of a later semester, can begin in either the winter or summer semester.

(4) Apart from those application materials listed in Article 5 Para 3 of ZulO, the following application materials shall be submitted:

- Proof of the requisite language skills (Para 1 and 2 in connection with Article 4 of the admission regulations [ZulO])
- Proof of a degree in an appropriate subject/degree program
- Proof of credit points in accordance with Para 1 (b).

### § 5 Duration and Organization of Master's Program

(1) The consecutive Master's program in Biochemistry and Molecular Biology is offered at the University of Potsdam as a single-discipline program with a standard completion time (full-time study) of four semesters and 120 credit points (CP). The Master's program is not suitable as a part-time program.

(2) The Master's program is subdivided as follows:

Mandatory modules	12 CP
Orientation modules	33 CP
Advanced module	5 CP

Elective modules	40 CP
Master's thesis	30 CP

### § 6 Modules and the Course of Study

(1) The Master's program in Biochemistry and Molecular Biology is comprised of the following components:

Module number	Name of module	CP
<b>I Mandatory modules (12 CP)</b>		
BIO-B-KM1	State of the Art in Biochemistry and Molecular Biology	6
BIO-B-KM2	Practical Bioinformatics	6
<b>II Orientation modules (33 CP)</b> <i>Three of the following orientation modules are to be selected:</i>		
BIO-B-RM1	Nanobiotechnology	11
BIO-B-RM2	Cellular Signal Transduction	11
BIO-B-RM3	Evolutionary Genomics (Evolution across Scales, module D)	11
BIO-B-RM4	Antibody Technologies	11
BIO-B-RM5	Novel Cloning Technologies for Future Biotechnology	11
BIO-B-RM6	Animal Models in Developmental Biology and Cell Physiology	11
BIO-B-RM7	Bioelectronics	11
BIO-B-RM8	Immunotechnology	11
BIO-B-RM9	Synthetic Biology	11
BIO-B-RM10	Modern Methods in Light Microscopy	11
BIO-B-RM11	Physiology of Microorganisms	11
BIO-B-RM12	Current Aspects and Methods of Plant Cell Biology	11
BIO-B-RM13	Evolutionary and Population Genetics	11
BIO-B-RM14	Physical Methods in Live Cell Imaging	11
BIO-B-RM15	Metalloproteins	11
BIO-B-RM16	Current Aspects of Plant Physiology	11
BIO-B-RM17	Current Problems and Modern Methods in Plant Genetics and Epigenetics	11
BIO-B-RM18	Microevolution/Conserving the Evolutionary Process (Evolution across Scales, module C)	11
BIO-B-	The Central Role of Evolution-	11

RM19	ary Biology in Biosciences (Evolution across Scales, module A)	
BIO-B-RM20	Neurobiology	11
BIO-B-RM21	Molecular Biology and Genome Research	11
BIO-B-RM22	Current Research in Biochemistry and Molecular Biology in Local Research Institutes and Biotechnology Companies A	11
BIO-B-RM23	Immunology and Immunotechnology	11
III Advanced module (5 CP)		
BIO-B-B-VM	Advanced Research Practical	5
IV Elective modules (40 CP) Students may select orientation modules they have not yet taken as well as modules from the list below. Altogether, these may not add up to more than 40 CP ( $5*8 = 2*8 + 4*6 = 2*11 + 3*6$ ). Surplus modules are not accounted for in the calculation. Article 31 Para 2 of BAMA-O remains in force.		
BIO-B-WM1	Biochemistry A	8
BIO-B-WM2	Biotechnology A	8
BIO-B-WM3	Protein Science A	8
BIO-B-WM4	Genome Research and Systems Biology A	8
BIO-B-WM5	Molecular Biology A	8
BIO-B-WM6	Cellular and Developmental Biology A	8
BIO-B-WM7	Biochemistry B	6
BIO-B-WM8	Biotechnology B	6
BIO-B-WM9	Protein Science B	6
BIO-B-WM10	Genome Research and Systems Biology B	6
BIO-B-WM11	Molecular Biology B	6
BIO-B-WM12	Cellular and Developmental Biology B	6
BIO-B-WM13	Current Research in Biochemistry and Molecular Biology in Local Research Institutes and Biotechnology Companies B	6
BIO-B-WM14	Biochemistry and Molecular Biology as Reflected in Other Sciences A	8
BIO-B-WM15	Biochemistry and Molecular Biology as Reflected in Other Sciences B	6
BIO-B-WM16	Biochemistry and Molecular	8

	Biology in Practice A	
BIO-B-WM17	Biochemistry and Molecular Biology in Practice B	6

(2) A maximum of 14 CP may be earned from the electives BIO-B-WM14, BIO-B-WM15, BIO-B-WM16, and BIO-B-WM17.

(3) The language of instruction in the Master's program in Biochemistry and Molecular Biology is English. Exceptions are possible. All mandatory classes can be completed without German skills.

(4) Sample courses of study for the Master's program are provided in Appendix 1 of these regulations.

(5) Further details of the module descriptions for the modules listed in Para 1 are governed by Appendix 2: Module Catalog.

### § 7 Master's Thesis

(1) As soon as the student has completed at least 77 credit points and the three orientation modules, he or she is entitled to have the Examining Board immediately process his or her Master's thesis registration.

(2) The Master's thesis, including the oral defense, is equivalent to 30 credit points. The thesis project may be conducted at the department of a university instructor who is involved in teaching for the Master's program or, subject to the Examining Board's approval, may be conducted at a university-based or extramural research institute working in a field relevant to the Master's program and located either in Germany or abroad.

(3) The Master's thesis is to be written in English. Upon application, the Examining Board may authorize it to be written in German.

### § 8 Passes

In the Master's program in Biochemistry and Molecular Biology, students have two passes.

### § 9 Stay Abroad

A stay abroad is possible during the Master's program.

### § 10 Application, Termination, and Transfer Regulations

(1) These regulations take effect on the day after their publication in the Official Public Notices of the University of Potsdam.

(2) These regulations apply to all students who enroll in the Master's program in Biochemistry and Molecular Biology at the University of Potsdam after these regulations are published officially.

(3) The provisions of the regulations, dated February 18, 2010, for the Bachelor's program in Biosciences and the Master's programs in Ecology, Evolution, and Natural Protection and Biochemistry and Molecular Biology, which previously applied to the Master's program in Biochemistry and Mo-

lecular Biology, will cease to apply as of October 1, 2020.

(4) Upon application to the Examining Board, University of Potsdam students who have enrolled in the Master's program in Biochemistry and Molecular Biology of February 18, 2010, before these regulations take effect, may transfer to the scope of these regulations within a year after they take effect as per Para 1. Coursework they previously completed as part of the program is to be recognized without penalty. Once the transition period under Para 3 has lapsed, students who are still studying under the prior regulations will be officially transferred to the new discipline-specific regulations.

## Appendix 1: Module catalog

The descriptions of the program's modules listed in Article 5 Para 1 and the tables below are governed by the statutes of the module catalog of the Faculty of Science as a supplement to the Bachelor's and Master's programs at the University of Potsdam (MK MNF) Supplementary regulations and/or deviations from the MK MNF are indicated in the tables that follow.

### List of modules:

Module number:	Module name:	CP	Mand./ Elec.	Prerequisites
BIO-B-KM1	State of the Art in Biochemistry and Molecular Biology	6	Mand.	None
BIO-B-KM2	Practical Bioinformatics	6	Mand.	None
BIO-B-RM1	Nanobiotechnology	11	Elec.	None
BIO-B-RM2	Cellular Signal Transduction	11	Elec.	None
BIO-B-RM3	Evolutionary Genomics (Evolution across Scales, module D)	11	Elec.	None
BIO-B-RM4	Antibody Technologies	11	Elec.	None
BIO-B-RM5	Novel Cloning Technologies for Future Biotechnology	11	Elec.	None
BIO-B-RM6	Animal Models in Developmental Biology and Cell Physiology	11	Elec.	None
BIO-B-RM7	Bioelectronics	11	Elec.	None
BIO-B-RM8	Immunotechnology	11	Elec.	Recommended: a basic background in immunology and biotechnology.
BIO-B-RM9	Synthetic Biology	11	Elec.	Recommended: a basic background in one or more of the following fields: molecular biology, biochemistry, cell biology, bioinformatics, biophysics, or modeling.
BIO-B-RM10	Modern Methods in Light Microscopy	11	Elec.	None
BIO-B-RM11	Physiology of Microorganisms	11	Elec.	None
BIO-B-RM12	Current Aspects and Methods of Plant Cell Biology	11	Elec.	None
BIO-B-RM13	Evolutionary and Population Genetics	11	Elec.	None
BIO-B-RM14	Physical Methods in Live Cell Imaging	11	Elec.	None
BIO-B-RM15	Metalloproteins	11	Elec.	None
BIO-B-RM16	Current Aspects of Plant Physiology	11	Elec.	None
BIO-B-RM17	Current Problems and Modern Methods in Plant Genetics and Epigenetics	11	Elec.	None
BIO-B-RM18	Microevolution/Conserving the Evolutionary Process (Evolution across Scales, module C)	11	Elec.	None
BIO-B-RM19	The Central Role of Evolutionary Biology in Biosciences (Evolution across Scales, module A)	11	Elec.	None
BIO-B-RM20	Neurobiology	11	Elec.	None

BIO-B-RM21	Molecular Biology and Genome Research	11	Elec.	None
BIO-B-RM22	Current Research in Biochemistry and Molecular Biology in Local Research Institutes and Biotechnology Companies	11	Elec.	None
BIO-B-RM23	Immunology and Immunotechnology	11	Elec.	None
BIO-B-B-VM	Advanced Research Practical	5	Mand.	None
BIO-B-WM1	Biochemistry A	8	Elec.	None
BIO-B-WM2	Biotechnology A	8	Elec.	None
BIO-B-WM3	Protein Science A	8	Elec.	None
BIO-B-WM4	Genome Research and Systems Biology A	8	Elec.	None
BIO-B-WM5	Molecular Biology A	8	Elec.	None
BIO-B-WM6	Cellular and Developmental Biology A	8	Elec.	None
BIO-B-WM7	Biochemistry B	6	Elec.	None
BIO-B-WM8	Biotechnology B	6	Elec.	None
BIO-B-WM9	Protein Science B	6	Elec.	None
BIO-B-WM10	Genome Research and Systems Biology B	6	Elec.	None
BIO-B-WM11	Molecular Biology B	6	Elec.	None
BIO-B-WM12	Cellular and Developmental Biology B	6	Elec.	None
BIO-B-WM13	Current Research in Biochemistry and Molecular Biology in Local Research Institutes and Biotechnology Companies B	6	Elec.	None
BIO-B-WM14	Biochemistry and Molecular Biology as Reflected in Other Sciences A	8	Elec.	None
BIO-B-WM15	Biochemistry and Molecular Biology as Reflected in Other Sciences B	6	Elec.	None
BIO-B-WM16	Biochemistry and Molecular Biology in Practice A	8	Elec.	None
BIO-B-WM17	Biochemistry and Molecular Biology in Practice B	6	Elec.	None

CP = Number of credit points; Mand. = Mandatory module; Elec. = Elective module

**Appendix 2: Sample courses of study**

<i>When starting in the winter semester</i>		<i>When starting in the summer semester</i>	
<b>Sem. and Total CP</b>	<b>Modules</b>	<b>Sem. and Total CP</b>	<b>Modules</b>
1. a. 27 CP b. 28 CP c. 27 CP	1 orientation module (11 CP) Elective modules (16 CP) (17 CP) (16 CP)	1. a. 31 CP b. 29 CP c. 29 CP	Core module 1 (6 CP) Core module 2 (6 CP) 1 orientation module (11 CP) Elective modules (8 CP) (6 CPS) (6 CPS)
2. a. 31 CP b. 29 CP c. 29 CP	Core module 1 (6 CP) Core module 2 (6 CP) 1 orientation module (11 CP) Elective modules (8 CP) (6 CPS) (6 CPS)	2. a. 27 CP b. 28 CP c. 27 CP	1 orientation module (11 CP) Elective modules (16 CP) (17 CP) (16 CP)
3. a. 32 CP b. 33 CP c. 34 CP	1 orientation module (11 CP) Elective modules (16 CP) (17 CP) (18 CP) Advanced module (5 CP)	3. a. 32 CP b. 33 CP c. 34 CP	1 orientation module (11 CP) Elective modules (16 CP) (17 CP) (18 CP) Advanced module (5 CP)
4.  30 CP	Master's thesis (30 CP)	4.  30 CP	Master's thesis (30 CP)