

# Subject-Related Examination and Study Regulations for the Master's Programme Biotechnology of 11 January 2019

## English translation, not legally binding!

In accordance with the Brandenburg Higher Education Act (BbgHG) of 28 April 2014 (Brandenburg Law Gazette I/14 no. 18), last amended by Article 2 of the Act of 20 September 2018 (Brandenburg Law Gazette I/18 no. 21), in accordance with Section 5 Paragraph 1 Sentence 2 and Section 9 Paragraph 5 Sentence 2 in combination with Section 19 Paragraph 2 Sentence 1, Section 22 Paragraph 2 Sentence 1, Section 72 Paragraph 2 Sentence 1 and Section 1 Paragraph 1 of the General Examination and Study Regulations for Master's Degree Programmes at BTU Cottbus-Senftenberg of 12 September 2016 (Official Gazette of the BTU 14/2016), Brandenburg University of Technology Cottbus–Senftenberg (BTU) has adopted the following statute:

### Contents

§ 1	Scope of Validity . . . . .	2
§ 2	Profile of the Study Programme, Goals of the Programme . . . . .	2
§ 3	Graduation, Degree . . . . .	2
§ 4	Subject-Related Admission and Enrolment Requirements . . . . .	2
§ 5	Regular Duration of the Programme, Scope of the Programme . . . . .	3
§ 6	Programme Structure and Form . . . . .	3
§ 7	Special Regulations for the Organisation of Examinations . . . . .	4
§ 8	Master Thesis . . . . .	4
§ 9	Additional Regulations . . . . .	4
§ 10	Entry into Force, Transitional Regulations, Abrogation . . . . .	4
Annex 1: Overview of the Modules, Status, Credit Points (CP) . . . . .		6
Annex 2: Regular Study Plan . . . . .		7
Annex 3: Special Provisions in Case of a Regular Programme Duration of 4 Semesters (Section 5 Paragraph 4) . . . . .		8
Annex 4: Overview of the Accessory Modules, Status, Credit Points (CP) in Case of a Regular Programme Duration of 4 Semesters . . . . .		8
Annex 5: Regular Study Plan in Case of a Regular Programme Duration of 4 Semesters . . . . .		9

## **§ 1 Scope of Validity**

<sup>1</sup>This statute regulates the subject-specific features of the master's programme in Biotechnology. <sup>2</sup>They supplement the General Examination and Study Regulations for Master's Degree Programmes at BTU (RahmenO-MA) of 12 September 2016 (Official Gazette of the BTU 14/2016).

## **§ 2 Profile of the Study Programme, Goals of the Programme**

(1) <sup>1</sup>The international master's programme in Biotechnology focuses on applied research and has an applied sciences academic profile. <sup>2</sup>Based on the bachelor's degree, students are taught theoretical and practical curriculum content (especially practical laboratory work) in the basic biotechnology modules in the chosen discipline.

(2) <sup>1</sup>The programme contains a high proportion of problem-based seminars in small groups. <sup>2</sup>Models are illustrated using original scientific papers, so that the connection between scientific questions, experimental approach, advantages and disadvantages of the methods used, and sceptical interpretation of raw data becomes clear.

(3) <sup>1</sup>Graduates of the study programme will be able to work independently both in research institutions and in manufacturing or administration. <sup>2</sup>They will be familiar with international scientific literature and will be able to plan, carry out and evaluate scientific experiments, and present their findings. <sup>3</sup>Because they acquire a wide range of knowledge beyond their discipline, graduates are also able to work in related specialist fields.

## **§ 3 Graduation, Degree**

Upon successful completion of the Master's programme in Biotechnology, the degree of "Master of Science" (M. Sc.) will be awarded.

## **§ 4 Subject-Related Admission and Enrolment Requirements**

(1) The following subject-related admission requirements have been established:

- as a minimum, a bachelor's degree with 210 CP (credit points) in Biotechnology, or a comparable degree with 210 CP,
- a Bachelor Thesis in either German or English or an equivalent publication (if the Bachelor Thesis was not written in either German or English, an additional abstract in German or English must be submitted),
- at least 70 CP or 60 contact hours in biological, biomedical, biochemical or biophysical subjects in the bachelor's degree programme,
- relevant specialist practical laboratory work of at least 18 weeks.

(2) For students with a bachelor's degree with 180 CP the admission requirements set out in Annex 3 shall apply in accordance with Section 5 Paragraph 4, notwithstanding Section 4 Paragraph 1, first bullet point.

(3) Evidence of the English language skills required for this programme must be provided in accordance with Section 3 Paragraph 3 of BTU's Enrolment Regulations of 11 July 2018 (Official Gazette of the BTU 12/2018).

(4) Students who have completed their studies for the bachelor's programme in Biotechnology in accordance with Part B of the University Study and Examination Regulations of the Lausitz University of Applied Sciences of 08 August 2011 (Gazette 219/2011), can provide evidence of the required language skills through successful completion of the compulsory "Foreign Language" module in English, in accordance with Annex 1 of that statute.

### **§ 5 Regular Duration of the Programme, Scope of the Programme**

(1) The regular duration of the programme is three semesters.

(2) The course is full-time, and is not suitable for part-time studies.

(3) The programme starts in the summer semester and is worth 90 CP.

(4) <sup>1</sup>If certain conditions apply, the programme may also consist of a regular duration of four semesters. <sup>2</sup>Specific details governing this case are set out in Annex 3.

### **§ 6 Programme Structure and Form**

(1) The language of teaching and examination is English.

(2) Four disciplines are offered:

- Cell Biology,
- Microbiology,
- Bioanalytics,
- Laboratory Diagnostics.

(3) <sup>1</sup>The programme consists of mandatory and compulsory elective modules in the first two semesters, in accordance with the curriculum described in Annexes 1 and 2. <sup>2</sup>Mandatory modules totalling 39 CP and compulsory elective modules amounting to 15 CP must be completed in the chosen discipline, in accordance with Annex 1.

(4) The compulsory elective modules must be selected from the five-credit mandatory modules from other disciplines, or from other compulsory elective modules, in accordance with Annex 1.

(5) <sup>1</sup>Another, six-credit module (General Studies – FÜS) provides interdisciplinary knowledge and skills. <sup>2</sup>Students choose a module in English or German from the BTU FÜS catalogue.

(6) The semester containing the Master Thesis is planned as a mobility window.

## **§ 7 Special Regulations for the Organisation of Examinations**

<sup>1</sup> If required, compulsory elective modules may be newly defined or adjusted by the Examination Board. <sup>2</sup>Compulsory elective modules that are due to expire are usually announced two years in advance.

## **§ 8 Master Thesis**

(1) <sup>1</sup>The Master Thesis module is worth 30 CP. <sup>2</sup>The time allowed to produce the written thesis is five months.

(2) The topic for the Master Thesis will be issued when all other mandatory modules and compulsory elective modules worth a minimum of ten credit points and totalling a minimum of 49 CP have been passed.

## **§ 9 Additional Regulations**

The programme is subject to special requirements for working in laboratories at security level S2 and safety level B2 in accordance with the German Act Regulating Genetic Engineering (Genetic Engineering Act – GenTG) in the version published on 16 December 1993 (Federal Law Gazette I p. 2066), last amended by Article 4(13) of the Act of 18 July 2016 (Federal Law Gazette I p. 1666), in conjunction with the German Directive on Safety Classification and Safety Measures in Genetic Engineering Projects in Genetic Engineering Facilities (Genetic Engineering Safety Directive – GenTSV) in the version published on 14 March 1995 (Federal Law Gazette I p. 297), last amended by Article 57 of the Directive of 31 August 2015 (Federal Law Gazette I p. 1474), and by the German Directive on Health and Safety when Working with Biological Materials (Biomaterials Directive – BioStoffV) of 15 July 2013 (Federal Law Gazette I p. 2514), last amended by Article 146 of the Act of 29 March 2017 (Federal Law Gazette I p. 626).

## **§ 10 Entry into Force, Transitional Regulations, Abrogation**

(1) <sup>1</sup>These regulations shall come into force the day after they are published in the Official Gazette of the BTU. <sup>2</sup>They shall apply for the first time to all students starting programmes in the winter semester 2018/19.

(2) Students who have completed their studies in accordance with Part B as it relates to the master's programme in Biotechnology in the University Study and Examination Regulations of Lausitz University of Applied Sciences of 28 March, 2012 (Gazette 229/2012) in the version containing the first amended statute to Part B for the master's Programme in Biotechnology of 28 November 2012 (Gazette 244/2012), will continue their programme in accordance with that statute.

(3) Part B of the University Study and Examination Regulations of the Lausitz University of Applied Sciences of 28 March 2012 (Gazette 229/2012) as it relates to the master's programme in Biotechnology and the first amended statute to Part B of 28 November 2012 as it relates to the master's programme in Biotechnology (Gazette 244/2012) shall cease to be valid four semesters after the final student has enrolled, and once the regular duration of the programme plus four semesters has passed.

(4) The revised version of the subject-specific Examination and Study Regulations for the Master's Programme in Biotechnology of 8 August 2018 (Official Gazette of the BTU 19/2018) will be repealed once this statute enters into force.

(5) These Examination and Study Regulations will cease to be valid four semesters after the final student has enrolled, and once the regular duration of the programme plus four semesters has passed.

Issued on the basis of the decisions made by the Faculty Council of Faculty 2 – Environment and Natural Sciences held on 10 January 2018 and 7 November 2018, the opinion provided by the Senate on 15 November 2018 and the approval of the President of Brandenburg University of Technology Cottbus-Senftenberg given on 20 November 2018, and the approval of the Ministry of Science, Research and Culture given on 3 January 2019.

## Annex 1: Overview of the Modules, Status, Credit Points (CP)

Module No.	Module	CP	Evaluation	Status			
				Cell Biology	Microbiology	Bioanalytics	Laboratory Diagnostics
12771	Cells and Tissues – Culture and Evaluation	8	EX	M	CE	CE	CE
12772	Bioengineering of Animal/Human Cells	8	EX	M	CE	CE	CE
12773	Genetic Engineering of Eukaryotic Cells	8	EX	M	CE	CE	CE
12776	Eukaryotic Microorganisms/Microalgae	8	EX	CE	M	CE	CE
12777	Methods in Synthetic Microbiology	8	EX	CE	M	CE	CE
12791	Metabolic Analysis and Engineering	8	EX	CE	M	CE	CE
12792	Methods in Nanobiotechnology	8	EX	CE	CE	M	CE
12793	Purification and Characterisation of Proteins	8	EX	CE	CE	M	CE
12794	Methods in Enzyme Technology	8	EX	CE	CE	M	CE
12797	Methods in Laboratory Diagnostics	8	EX	CE	CE	CE	M
12798	Methods in Bioanalytics	8	EX	CE	CE	CE	M
12799	Molecular Biology: Principles, Methods and Applications	8	EX	CE	CE	CE	M
11825	Tissue Engineering	5	EX	M	CE	CE	CE
12175	Molecular Dynamics of the Cell	5	EX	M	CE	CE	CE
12762	Signal Transduction	5	EX	M	CE	CE	CE
12800	Microbial Metabolism	5	EX	CE	M	CE	CE
12763	Enzyme Technology	5	EX	CE	M	CE	CE
12764	Synthetic Microbiology	5	EX	CE	M	CE	CE
11858	Proteostasis	5	EX	CE	CE	M	CE
12765	Nanobiotechnology	5	EX	CE	CE	M	CE
12766	Bioprocess Development	5	EX	CE	CE	M	CE
12767	Point of Care Diagnostic	5	EX	CE	CE	CE	M
12795	Immunology	5	EX	CE	CE	CE	M
12768	Introduction to Laboratory Diagnostics	5	EX	CE	CE	CE	M
12769	Molecular Biotechnology and Society	6	EX	CE	CE	CE	CE
	General Studies*	6	EX	CE	CE	CE	CE
12770	Master Thesis	30	EX	M	M	M	M

M = Mandatory Module, CE = Compulsory Elective Module, EX = Examination, SP = Study Performance

\* Freely selectable from the respective current General Studies (GE) offer at BTU.

## Annex 2: Regular Study Plan

✕	Cell Biology	Microbiology	Bioanalytics	Laboratory Diagnostics
1. Semester	Cells and Tissues – Culture and Evaluation	Eukaryotic Microorganisms/ Microalgae	Methods in Nanobiotechnology	Methods in Laboratory Diagnostics
	Bioengineering of Animal/Human Cells	Methods in Synthetic Microbiology	Purification and Characterisation of Proteins	Methods in Bioanalytics
	Tissue Engineering	Enzyme Technology	Proteostasis	Introduction to Laboratory Diagnostics
	Molecular Dynamics of the Cell	Compulsory Elective	Nanobiotechnology	Compulsory Elective
	Compulsory Elective	Compulsory Elective	Compulsory Elective	Compulsory Elective
	31 CP	31 CP	31 CP	31 CP
2. Semester	Genetic Engineering of Eukaryotic Cells	Metabolic Analysis and Engineering	Methods in Enzyme Technology	Molecular Biology: Principles, Methods and Applications
	Signal Transduction	Synthetic Microbiology	Bioprocess Development	Point of Care Diagnostic
	Compulsory Elective	Microbial Metabolism	Compulsory Elective	Immunology
	Compulsory Elective	Compulsory Elective	Compulsory Elective	Compulsory Elective
	GS	GS	GS	GS
	29 CP	29 CP	29 CP	29 CP
3. Semester	Master Thesis	Master Thesis	Master Thesis	Master Thesis
	30 CP	30 CP	30 CP	30 CP
<b>Σ</b>	<b>90 CP</b>	<b>90 CP</b>	<b>90 CP</b>	<b>90 CP</b>

### **Annex 3: Special Provisions in Case of a Regular Programme Duration of 4 Semesters (Section 5 Paragraph 4)**

1. Notwithstanding Section 4 (1), first bullet point, the following provision shall apply: as a minimum, a bachelor's degree with 180 CP (credit points) in Biotechnology, or a comparable degree with 180 CP.
2. Notwithstanding Section 5 (1) the following provision shall apply: The regular duration of the programme is four semesters.
3. Notwithstanding Section 5 (3) the following provision shall apply: The programme starts in the winter semester and is worth 120 CP.
4. Notwithstanding Section 6 (3) the following provision shall apply: <sup>1</sup>The programme consists of mandatory and compulsory elective modules in the first three semesters, in accordance with the curriculum described in Annexes 1, 4 and 5. <sup>2</sup>Mandatory modules totalling 69 CP and compulsory elective modules amounting to 15 CP must be completed in the chosen discipline, in accordance with Annexes 1 and 4.
5. Notwithstanding Section 8 (2), the following provision shall apply: The topic for the Master Thesis will be issued when all other mandatory modules and compulsory elective modules worth a minimum of ten credit points and totalling a minimum of 79 CP have been passed.

### **Annex 4: Overview of the Accessory Modules, Status, Credit Points (CP) in Case of a Regular Programme Duration of 4 Semesters**

Module No.	Module	CP	Evaluation	Status			
				Cell Biology	Microbiology	Bioanalytics	Laboratory Diagnostics
12740	Introduction to Scientific Work	6	SP	M	M	M	M
12739	Research Internship	24	EX	M	M	M	M

M = Mandatory Modul, EX = Examination, SP = Study Performance



## Annex 5: Regular Study Plan in Case of a Regular Programme Duration of 4 Semesters

	Cell Biology	Microbiology	Bioanalytics	Laboratory Diagnostics
1. Semester	Introduction to Scientific Work	Introduction to Scientific Work	Introduction to Scientific Work	Introduction to Scientific Work
	Research Internship	Research Internship	Research Internship	Research Internship
2. Semester	Cells and Tissues – Culture and Evaluation	Eukaryotic Microorganisms/ Microalgae	Methods in Nanobiotechnology	Methods in Laboratory Diagnostics
	Bioengineering of Animal/Human Cells	Methods in Synthetic Microbiology	Purification and Characterisation of Proteins	Methods in Bioanalytics
	Tissue Engineering	Enzyme Technology	Proteostasis	Introduction to Laboratory Diagnostics
	Molecular Dynamics of the Cell	Compulsory Elective	Nanobiotechnology	Compulsory Elective
	Compulsory Elective	Compulsory Elective	Compulsory Elective	Compulsory Elective
	31 CP	31 CP	31 CP	31 CP
3. Semester	Genetic Engineering of Eukaryotic Cells	Metabolic Analysis and Engineering	Methods in Enzyme Technology	Molecular Biology: Principles, Methods and Applications
	Signal Transduction	Synthetic Microbiology	Bioprocess Development	Point of Care Diagnostic
	Compulsory Elective	Microbial Metabolism	Compulsory Elective	Immunology
	Compulsory Elective	Compulsory Elective	Compulsory Elective	Compulsory Elective
	GS	GS	GS	GS
	29 CP	29 CP	29 CP	29 CP
4. Semester	Master Thesis	Master Thesis	Master Thesis	Master Thesis
	30 CP	30 CP	30 CP	30 CP
<b>Σ</b>	<b>120 CP</b>	<b>120 CP</b>	<b>120 CP</b>	<b>120 CP</b>