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**Study and Examination Regulations (Statutes)
of the Department for Mechanical Engineering, Process Engineering and Maritime Technologies and the Department for Energy and Biotechnology for the Master Program Biotechnology and Process Engineering at Fachhochschule Flensburg as of October 24th 2013**

- (1) On the basis of § 52 para. 1 of the *Hochschulgesetz* (HSG) [Law on Higher Education] as of February 28th 2007 (GVOBl. Schl.-H. 2007, page 184), last updated by the law as of August 22th 2013 (GVOBl. Schl.-H. page 365) following the resolution made by the Convent of the department for Mechanical Engineering, Process Engineering and Maritime Technologies on April 24th 2013 and the resolution made by the Department for Energy and Biotechnology on April 24th 2013, the approval of the senate of Fachhochschule Flensburg on October 23th 2013 and the permission granted by the Presidium of the *Fachhochschule Flensburg* on October 23th 2013 the following Statutes are issued.
- (2) These Study and Examination Regulations apply to conventions valid across departments as stated in the *Prüfungsverfahrensordnung* (PVO) [Examination Procedure Regulations] of *Fachhochschule Flensburg*.

**§ 1
Objective of Studies**

The objectives of studies in the degree program Biotechnology and Process Engineering are:

- (1) Independent identification and analysis of problems related to the subject of biotechnology and process engineering in order to develop autonomous technical solutions and to bring these solutions for products and services to market.
- (2) Acquisition of (specialized) knowledge and skills and their application on complex scientific problems
- (3) Formation of general expertise in professional methods (project management, team work)
- (4) Ability to work independently on scientific problems in innovative fields of research

**§ 2
Completion of Studies**

- (1) On the basis of successfully completing final examinations of the Master program the following academic degree will be awarded: Master of Science (abbr. M.Sc.).
- (2) The Master degree is a further vocational qualification and formally entitles its bearer to embark on a doctorate.

**§ 3
Entry Requirements**

- (1) The admission to the Master program will be granted by the Presidium based on the recommendation made by a selection committee composed of two professors from the program who shall be designated by the two departments involved.
- (2) Students who successfully passed the final examination and acquired a Bachelor degree or German Diplom in Biotechnology/Process Engineering receive admission to participate in a Master program.

- (3) Applicants from similar degree programs may be admitted to the Master program under the condition that they re-take specific courses. The specific modules are to be defined by the selection committee according to the procedure described in the annex to these Regulations. Proof for successful attendance of these additional modules is prerequisite to the admission for 2nd semester examinations. Further details are provided in the Annex "Specifications of Entry and Admission Requirements."
- (4) Whenever the similar Bachelor degree program that has been finished was comprised of less than 210 Credit Points in total, one condition needs to be fulfilled. This condition will be to complete modules with a Credit Points total adding up to the difference between the total of Credit Points in the completed Bachelor degree and 210 Credit Points. The modules to be completed will be assigned by the Selection Committee as defined in the procedure described in the Annex of these Regulations. Proof of successful completion of these modules will be the prerequisite to admission to the 2nd semester examinations. For further details please consult the Annex "Specifications of Entry and Admission Requirements."
- (5) Apart from the prerequisites defined in paragraphs 1 to 4 the following prerequisites need to be fulfilled for admission to the degree program:
 1. A final grade of at least *GUT* [GOOD] or
 2. Proof of relevant professional experience of at least two years after having completed University education or
 3. A minimum of two favourable letters of reference from professors of the university/universities previously attended.
- (6) Applicants have to provide evidence of English language skills on a satisfactory level. The evidence can be provided as follows:
 1. English being the native language or
 2. By means of a Cambridge First Certificate or
 3. By means of a grade of *BEFRIEDIGEND* [SATISFACTORY] or 7 points in English on a certificate issued from a secondary school granting admission to Higher Education [German *Fachhochschulzugangsberechtigung*] or
 4. By means of a stay in an English speaking country for a minimum of one year or
 5. By means of a TOEFL test with a score of at least 61 (*iBT*) or an IELTS result of 5.0 (*Overall Band Score*) or
 6. By means of a proof of classes being taught sufficiently bilingual during pre-university education.

§ 4

Standard Duration and Volume of the Program

- (1) The Program is to be completed within three semesters including the final examination.
- (2) In the first two semesters the number of classes attended should add up to a total of 20 hours per week. The Master thesis is to be produced in the third semester of the Program with an external company outside the *Fachhochschule* if possible.
- (3) A total of 30 Credit Points (CP) is to be acquired each semester.

§ 5 Modules and Examinations

- (1) The modules and examination plan may be found in the following table.
- (2) The manner in which acquired grades may be transferred and the manner in which they are recognized are defined according to §14, paragraph 6 of the *Prüfungsverfahrensordnung*. The following table defines in what way credit points are assigned to individual modules.

Modules and Examinations Plan for the Master Program Biotechnology and Process Engineering

These are the abbreviations used in the following table:

| Type of Class | | Type of Assessment | |
|----------------------|------------|---------------------------|--|
| L | Lecture | A(nl) | Assessment (unlimited number of attempts) |
| Sem | Seminar | A(max3) | Assessment (maximum number of attempts: 3) |
| T | Tutorial | | |
| Lab | Laboratory | | |
| P | Project | | |

| Class volume | | Form of Assessment | |
|---------------------|--------------------------------|---------------------------|---|
| HpW | Hours per week (in classroom) | WE(s) | Written exam(s hours) according to § 11 PVO [Examination Procedure Regulations] |
| CP | Credit Points (ECTS) | OE | Oral Exam according to § 12 PVO |
| | | OA | Other Form of Assessment according to § 13 PVO |
| | Other Forms of Assessments are | Pres | Presentation |
| | | WR | Written Report |
| | | WT(s) | Written Test(s hours) |
| | | TD | Technical Discussion: Oral Exam |
| | | HW | Homework |

| 1st Semester of Program | | | | | | | | |
|--|--|-------|-----------|-----------|------------|-----------------------------|------------------------------|------|
| Module | Class | Class | | | Assessment | | | |
| | | Type | HpW | CP | Type | Form (volume if applicable) | Prerequisite | |
| Advanced Theory of Cell Biology and Cell Culture Technology | Advanced Theory of Cell Biology | L | 2 | 3 | 6 | A(max3) | OA (WT(2), WT(1) & Pres, TD) | none |
| | Cell Culture Technology | Sem | 2 | 3 | | | | |
| Advanced Instrumental Analysis | Advanced Instrumental Analysis | L | 4 | 6 | | A(max3) | OA (WT(2), TD) | none |
| Advanced Theory of Process Engineering | Advanced Theory of Process Engineering | L | 4 | 6 | | A(max3) | OA (WT(2), TD) | none |
| Technical Elective Courses 1 | ¹⁾ | - | 4 | 6 | | A(max3) | ¹⁾ | none |
| Non-Technical Elective Courses | ¹⁾ | - | 4 | 6 | | A(max3) | ¹⁾ | none |
| Total of Modules of 1st semester | | | 20 | 30 | | 5 A(max3) | | |
| <p>Please note:</p> <p>¹⁾ Elective Courses: These modules offer a selection to be chosen from. The classes offered will be updated each semester and will be posted on the notice boards of the respective Dean's Offices at the beginning of each semester.</p> <p>Classes comprising a total of 4 hours per week (6 CP) require an Assessment (A(max3)) in the form of OA (...). Classes comprising a total of 2 hours per week (two times 3CP) require 2 Assessments (A(max3)) in the form of OA (...) per elective module. Any details regarding what the respective Other Form of Assessment may be are to be determined by the Examiners Board during the first four weeks of teaching.</p> | | | | | | | | |

| 2nd Semester of Program | | | | | | | |
|---|---------------|-----------|-----------|------------|------------------|-----------------------------|--------------|
| Module | Class | | | Assessment | | | |
| | | Type | HpW | CP | Type | Form (volume if applicable) | Prerequisite |
| Project Theory ¹⁾ | Theory 1 | see below | 4 | 6 | A(max3) | see below | none |
| | Theory 2 | see below | 4 | 6 | A(max3) | see below | none |
| Team Project ²⁾ | Team Project | see below | 8 | 12 | A(max3) | see below | none |
| Technical Elective Courses 2 | ³⁾ | - | 4 | 6 | A(max3) | ³⁾ | none |
| Total of Modules of 2nd semester | | | 20 | 30 | 4 A(max3) | | |
| <p>Please note:</p> <p>¹⁾ Project Theory: This module offers a range of projects to be chosen from. Details on the selection of projects may be found in the following table. This selection may be updated. In this case the updated selection will be posted on the notice boards of the respective Dean's Offices at the end of the preceding semester. The participation in a specific project is regulated according to §5 of the <i>Prüfungsverfahrensordnung</i> [Examination Procedure Regulations] – para. 5 in particular. The number of students participating in a project should not exceed a total of eight. In case of two applications being equal, a decision will be made based on the final grade of the Bachelor degree.</p> <p>²⁾ Team Project: In this module the project chosen during the Project Theory module will be specialised on further through teamwork. Project Theory and Team Project form a topical entity.</p> <p>³⁾ Elective Courses 2: These modules offer a selection to be chosen from. The classes offered will be updated each semester and will be posted on the notice boards of the respective Dean's Offices at the beginning of each semester. Classes comprising a total of 4 hours per week (6 CP) require an Assessment (A(max3)) in the form of OA (...). Classes comprising a total of 2 hours per week (two times 3CP) require 2 Assessments (A(max3)) in the form of OA (...) per elective module. Any details regarding what the respective Other Form of Assessment may be are to be determined by the Examiners Board during the first four weeks of teaching.</p> | | | | | | | |

| 3rd Semester of Program | | | | | | |
|---|-----------------------|----|------------|--|--------------|--|
| Module | | | Assessment | | | |
| Class | Type | CP | Type | Form (volume if applicable) | Prerequisite | |
| Master Thesis | Thesis and Colloquium | 30 | A(max3) | Time for Writing Thesis: 5 months Colloquium: 60 minutes | 30 CP | |
| Total of Modules of 3rd semester | | | 30 | 1 A(max3) | | |

| 2nd Semester of Program – Details on Elective Courses | | | | | | | | |
|---|--|-------------------------------------|-------|-----|------------|---------|-----------------------------|--------------|
| Module | | Class | | | Assessment | | | |
| | | | Type | HpW | CP | Type | Form (volume if applicable) | Prerequisite |
| A | Protein Factory | Protein Factory 1 | Sem | 4 | 6 | A(max3) | SP (WT(1), TD) | none |
| | | Protein Factory 2 | Sem | 4 | 6 | A(max3) | SP (Pres, TD) | none |
| | Team Project | Protein Factory | P | 8 | 12 | A(max3) | SP (WR) | none |
| B | Chemical Process Engineering / Green Engineering | Computer Aided Process Engineering | L/Lab | 4 | 6 | A(max3) | SP (WT(2), TD) | none |
| | | Green Engineering | Sem | 4 | 6 | A(max3) | SP (WR & Pres) | none |
| | Team Project | Chem. Pr. Eng. & Gr. Eng. | P | 8 | 12 | A(max3) | SP (WR & Pres) | none |
| C | Separation Technology | Separation Technology 1 | L/T | 4 | 6 | A(max3) | SP (WT(2), TD) | none |
| | | Separation Technology 2 | L/T | 4 | 6 | A(max3) | SP (WT(2), TD) | none |
| | Team Project | Separation Technology | P | 8 | 12 | A(max3) | SP (WR & Pres) | none |
| D | Food Biotechnology and Processing | Food Biotechnology and Processing 1 | Sem | 4 | 6 | A(max3) | SP (WT(1), TD) | none |
| | | Food Biotechnology and Processing 2 | Sem | 4 | 6 | A(max3) | SP (Pres, TD) | none |
| | Team Project | Food Biotechnology and Processing | P | 8 | 12 | A(max3) | SP (WR) | none |

§ 6 Language of Examination

- (1) Classes and examinations of the Master Program are to be held in English (§ 6, para. 4, PVO). If all students participating in a module agree, classes may be held in German.
- (2) Teaching material, documents used for examinations and examinations must be produced in English.
- (3) Group projects (presentations, reports) are to be delivered in English. If all members of a group file an application accordingly, projects may be delivered in German.
- (4) If an application is filed accordingly, the Master thesis may be written in German. If a respective application is accepted, the Colloquium may be held in German, too.

§ 7 Thesis

- (1) A minimum of 30 Credit Points (CP) is the prerequisite for admission to the Thesis. The Thesis is made up of the written thesis and a Colloquium.
- (2) The Thesis is to be produced in a time period of five months (§ 21, para. 6, PVO).
- (3) The subject of the Thesis may only be withdrawn within a period of four weeks after its allocation (§ 21, para. 7, PVO).
- (4) The time period in which the Thesis has to be finished may only be extended by a maximum of four weeks. An application for extension has to be issued with the examination board 14 days prior to the original deadline at the latest (§ 21, Abs. 8, PVO).

§ 8 Colloquium

- (1) A colloquium is designated to be part of the Master Program Biotechnology and Process Engineering (§ 24, Abs. 1, PVO).
- (2) The Colloquium is scheduled to take 60 minutes for each candidate (§ 24, para. 2, PVO).

§ 9 Composition of the Final Grade, Certificate

The final grade is derived from the weighted individual grades resulting from the Assessments (A(max3)) as well as the Master Thesis (which is made up of the grade for the written thesis counting 70% and the grade for the Colloquium counting 30%). The percentage to which a module is weighted into the final grade is determined on the basis of Credit Points: The Credit Points of a module are divided by the total Credit Points of all modules relevant to the final grade (§ 25, para. 3, PVO).

§ 10 Coming Into Effect

- (1) These Study and Examination Regulations will come into effect on the day after their publication.
- (2) They are effective for all students enrolled in the Master Program Biotechnology and Process Engineering at Fachhochschule Flensburg starting from the Summer Semester 2014.
- (3) Students are entitled to classes being taught and examinations being held only in the scope of these Regulations being introduced one semester after the other.

Issued:

Flensburg, October 24th 2013
FACHHOCHSCHULE FLENSBURG

Department for Mechanical Engineering
and Process Engineering and Maritime
Technologies
- The Dean -

Department for Energy and
Biotechnology

- The Dean -

sig. Prof. Dr. Axel Krapoth

sig. Prof. Dr. Jochen Wendiggensen

ANNEX

Specifications of Entry and Admission Requirements

A.1:

Similar degree programs according to §3, para. 3 and 4 are degree programs in

- Biotechnology, Bio Engineering, Bio Process Engineering etc.
- Chemical Engineering, Chemistry Technology etc.
- Process Engineering, Environmental Process Engineering etc.
- Mechanical Engineering with a Major in Process Engineering etc.

A.2:

Similar degree programs according to §3, para. 3 and 4, must include modules covering content and an amount of Credit Points as specified below:

Basics of Mathematics and Natural Sciences

- | | |
|---------------------------------|------------|
| • Mathematics | 10 Credits |
| • Physics | 5 Credits |
| • Chemistry (Organic/Inorganic) | 5 Credits |
| • Biology/Microbiology | 5 Credits |

Basics of Engineering Sciences

- | | |
|----------------------------|-----------|
| • Fluid Mechanics | 5 Credits |
| • Thermodynamics | 5 Credits |
| • Heat (and Mass) Transfer | 5 Credits |
| • Instrumental Analytics | 5 Credits |
| • Reactions Engineering | 5 Credits |

If applicants lack parts of the Basics named above in the specified volume, the respective modules will become prerequisites according to §3, para. 3 and 4. If an applicant needs to make up for more than 20 Credit Points from the Basics, they are not eligible to enrol.

A.3

Applicants according to §3, para. 4 are subject to the criteria as stated under A.2. In order to acquire additional Credit Points up to a total of 210 Credit Points the applicants are given the opportunity to primarily choose from courses offered as part of the 4th, 5th or 6th semester of the Bachelor degree program Biotechnologie-Verfahrenstechnik [Biotechnology / Process Engineering] at Fachhochschule Flensburg, this is to be decided in agreement with the Selection Committee. If an agreement regarding the modules to be taken cannot be reached, the Committee is entitled to assign certain modules that will then be mandatory.

Should the Selection Committee arrive at the conclusion that the total of Credit Points from the mandatory prerequisites from the Basics and the specialized contents of the higher semesters exceed 40, the respective applicants are not eligible to enrol.

A.4

The assigned modules must be fulfilled according to the Study and Examination Regulations of the respective degree program (usually B.Sc. Biotechnologie-Verfahrenstechnik) that they are part of. There is no guarantee or entitlement for the assigned modules to be offered (a) each semester and (b) in English.

A.5

In case of restrictions of admission access to Higher Education is regulated by the

Satzung der Fachhochschule Flensburg über das hochschuleigene Auswahlverfahren in den zulassungsbeschränkten Bachelor- und Masterstudiengängen
[Statutes of Fachhochschule Flensburg on the University's own selection procedure for Degree Programs with limited admission]

in its most recent version respectively.