

Important:

Please note that this document is a translation of the

“Wegleitung zum spezialisierten Joint Degree Masterstudium Biomedical Engineering an der Medizinischen Fakultät der Universität Basel und an der Hochschule für Life Sciences der Fachhochschule Nordwestschweiz”

*and as such is **NOT** legally binding.*

For legal purposes, please always refer to the original German document.

Guide to the Specialized Joint Degree Master Program in Biomedical Engineering at the Faculty of Medicine of the University of Basel and at the School of Life Sciences of the University of Applied Sciences of Northwestern Switzerland

1. General Provisions

These guidelines are based on the Regulations for the Specialized Joint Degree Master Program Biomedical Engineering of October 31, 2022 at the Faculty of Medicine of the University of Basel. It is of orientational character and regulates the general conditions for the implementation of courses offered within the Joint Degree Master Program Biomedical Engineering of the University of Basel and the University of Applied Sciences Northwestern Switzerland (HLS FHNW), hereinafter referred to as MSc BME, by the University of Basel.

2. Teaching and Examination Commission

A joint Teaching and Examination Commission (UPK) is in charge of the program. The Teaching and Examination Commission consists of 4 members of the HLS FHNW (each with voting rights), 4 members of the University of Basel (each with voting rights), the Dean of Studies of the Faculty of Medicine (without voting rights), the Head of Education HLS FHNW (without voting rights), 2 students (each with voting rights, but without voting rights for individual applications (e.g. concerning admissions, examinations or hardship cases)).

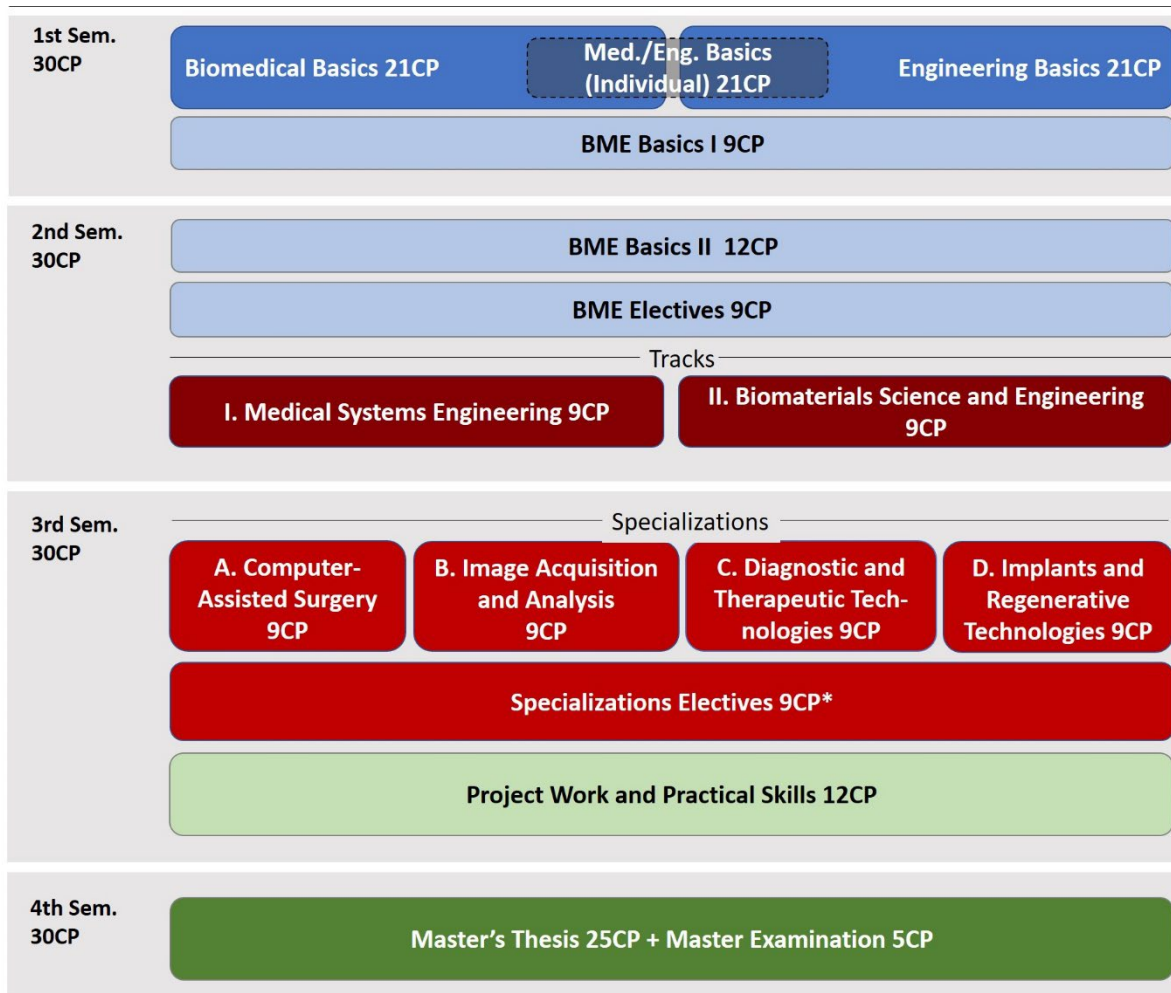
3. Structure of the Study Program

The Master's program comprises 120 credit points (CP), which corresponds to a standard period of study of four semesters for full-time study and can only be started in the fall semester. Part-time study is possible; the duration of study is extended accordingly. Part-time students contact the study administration to discuss a reasonable combination of courses.

The language of instruction is mainly English. It is the student's responsibility to have those language skills (recommended is at least a C1 level in English) that are required for the chosen course of study. In the event of failure to pass examinations, lack of language skills cannot be invoked. It is therefore recommended, if necessary, to take language courses before starting the Master's program (courses offered at: www.sprachenzentrum.unibas.ch).

The Master's program is divided into modules, see Fig. 1. 30 CP are acquired in each semester within these modules (full-time), cf. also § 9 of the study regulations.

The courses of both institutions are published in the joint course catalog on the joint website: <https://biomedicalengineering.ch/>. The credit points that can be earned in each course are also listed. The courses are registered at the responsible institution. The possible types of the courses are defined in the study regulations.



* Not all combinations of modules/courses can be guaranteed

Fig. 1. Overview of the curriculum with modules and credit points (CP).

Students from Computer Science, Electrical Engineering, Mechanical Engineering, Civil Engineering, Microengineering, Physics, Mathematics, Computational Sciences, Materials Science, Systems Engineering, Electrical Engineering, Medical Informatics, Medical Technology, Micro and Medical Engineering, Mobile Robotics, Computer Science, Data Science, Photonics, or similar must collect the required 21 CP from the Biomedical Basics (a*) module, and those from Human Medicine, Dentistry, Exercise and Sport Sciences, Pharmaceutical Sciences, Health Sciences and Technology, or similar must collect 21 CP from the Engineering Basics (b*) module. Students will be notified of the module to be taken with their admission letter.

(* The lower case letters (a-m) refer to the modules according to § 8 of the study regulations for the specialized Joint Degree MA study Biomedical Engineering).

Students with a Bachelor degree in Chemistry, Chemical Engineering, Biology, Biochemistry, Biomedical/Biomedical Sciences, Life Sciences and Technologies, Digital Life Sciences, Life Sciences, Biotechnology, or similar must collect the required 21 CP from courses from both modules. The combination of courses depends on the individual curriculum of the Bachelor's degree and is determined by the Teaching and Examination Committee and communicated to the student with the admission letter.

The Biomedical Engineering Basics (c*) module contains compulsory courses in the first and second semesters. In the first semester 9 CP are acquired and contain the following compulsory courses:

Materials Science and Biomaterials, Medical Image Processing, Introduction to LTI Systems and Control.

In the second semester, each student will take 12 additional CP from the Biomedical Engineering module with the following required courses:

Biomedical Engineering Basics (12 CP): Statistics for Biomedical Engineering, Sensor and Signal Processing, Mechanics II: Dynamics and Medical Device Development.

In the second semester, each student chooses one of the 2 modules with courses worth at least 9 CP:

- e) Medical Systems Engineering
- f) Biomaterials Science and Engineering

In the module Biomedical Engineering Electives (d*) each student chooses meaningful supplementary courses with a total value of 9 CP from the entire course offering of the second semester of the Joint Degree Master program Biomedical Engineering.

The courses of the modules Biomedical Basic or Engineering Basics as well as the lectures of the module Biomedical Engineering Basics are mandatory courses.

The elective courses of the respective modules are announced in the joint course catalog on the joint webpage before the beginning of the semester.

In justified exceptional cases, a different combination of courses may be approved by the head of the Teaching and Examination Committee (UPK).

In the third semester, each student chooses at least one of the 4 modules with courses worth at least 9 CP:

- (g) Computer Assisted Surgery
- h) Image Acquisition and Analysis
- i) Diagnostic and Therapeutic Technologies
- j) Implants and Regenerative Technologies

For the Specialization Electives, each student selects useful complementary courses worth 9 CP from the entire course offering of the third semester of the Joint Degree Master study Biomedical Engineering from the modules g-j*.

In the third semester, each student acquires practical experience to the extent of 12 CP within the Project Work and Practical Skills (k*) module. The requirements for starting with the Project Work and Practical Skills module are fulfilled with at least 48 acquired CP as well as the completion of all compulsory courses. The practical experiences can be on the one hand within a project work in a research laboratory (max. 2 days per week) or within a literature research work (6 CP max.) or/and in form of different practical courses. The possible practical courses will be announced in the joint course catalog on the common webpage before the beginning of the semester.

In the fourth semester the 30 CP are acquired within a master thesis 25 CP (l*) and a master examination 5 CP (m*).

4 Performance Reviews

According to §26 of the general student regulations of the University of Basel, timely registration to the courses is a prerequisite for participation in the course as well as for the associated performance review and thus for the acquisition of credit points.

At the request of the responsible lecturer, the Teaching Committee determines the type of performance review at the beginning of each course.

Examination dates and modalities are determined by the Teaching and Examination Committee in due time at the beginning of each course and published on the homepage of the Master's program as well as in the online course catalog of the responsible institutions.

Grades are given in whole, half or tenths of a grade. The grading scale ranges from 1.0 to 6.0, with a minimum grade of 4.0 required for passing. Satisfactory performance reviews cannot be repeated.

Main lecture exams (examen) can be repeated a maximum of once in case of failure. The second failure leads to exclusion from the study program.

In case of repeated failure of **record of achievement**, the course must be taken again or another course available for selection must be taken.

Oral and written performance reviews take place during the examination session after each semester. Repeat examinations take place in the following examination session.

Written examinations of 30 min to 3 h may be handwritten and/or electronic.

Upon application to the Teaching and Examination Committee, oral examinations may be brought forward or postponed if there are convincing reasons.

If a student fails to attend the performance review, it will be considered as failed and will be graded as "not appeared". Exceptions to this are regulated according to the StO MSc BME §24 or in paragraph 7.

5. Project Work

Project work allows students to gain initial practical experience on an independent research project. It comprises 12 CP, usually takes place during the semester and lasts 14 weeks. Students usually spend 2 single days or 4 half days per week in the laboratory. At the end of the semester or 14 weeks, the project work is completed with a report.

If the necessary requirements are met, the project work can be directly transferred to the master's thesis.

The practical work as well as the final report will be graded by the responsible lecturer.

6. Master's thesis and Master examination

The master's thesis is an essential part of the master's program, as students must demonstrate the ability to work independently and correctly in a scientific manner. The master's thesis starts after the successful completion of the exams - usually at the end of the 3rd semester.

The unexcused exceeding of the deadline fixed in the agreement leads to the failure of the master's thesis or to the grade 1. Possible extensions can only be approved by the head of the teaching and examination commission in exceptional cases that have to be justified.

Each student organizes his/her master examination him/herself and informs the Administration of Studies about the details; as a rule, it takes place a few days after the submission of the thesis. The student invites the examiners and organizes a room. The 45-minute master examination includes a 20-minute lecture on the master's thesis followed by a discussion (25 min) and is usually open to the public. Upon request to the Teaching Committee, the public may be excluded. One of the examiners must be a lecturer in the program. Both examiners must be recognized experts in the research area of the master's thesis. The master's thesis and the master's examination should be evaluated no later than 6 weeks after the master's thesis is submitted.

In addition to the written master's thesis, the preparation of an A0 poster or a factsheet is required. The poster can be presented at a public event at the university or at the university of applied sciences, the factsheet can be published on the website of the Department of Biomedical Engineering, University of Basel.

7. Postponement and Absence from Performance Reviews

A written request for postponement of examinations can be submitted to the study administration up to two weeks before the examination date. Reasons must be given for the request. In case of illness, the medical certificate must be submitted to the Study Administration in Biomedical Engineering no

later than five days after the respective examination or submission date. If a candidate fails to attend an examination without giving notice of absence or without a reason for being prevented from attending or for dropping out, or if he/she does not continue an examination that has been started, the examination is deemed to have been failed and is graded as "not appeared". The possibilities of repeating the examination are regulated in the study regulations.

8. Right to Inspect Performance Reviews and Responsibilities

The Teaching Commission Biomedical Engineering is responsible for the organization of the performance reviews as well as questions in connection with performance reviews and the right to inspect records, including the recognition of foreign degrees and the crediting of individual academic achievements. For the purpose of arranging an appointment to inspect the examination, a written request to inspect the records must be submitted to the Student Administration of the Department of Biomedical Engineering within 30 days of receipt of the order/data transcript.

For organizational reasons, examination inspection is limited in time to one hour. The inspection of the documents takes place in the presence of a supervisor. The inspection of the examination documents is documented by the date and signature of the candidate on the examination documents.

An appeal against an examination result must be filed in writing with the Appeals Commission of the University of Basel, Schützenmattstrasse 16, 4051 Basel, within 10 days of the inspection of the records. At the latest within 30 days from the same date, the grounds for appeal must be submitted, which must include the motions and the grounds with a statement of the facts and evidence.

9. Final Provision

These guidelines come into force on 01. September 2023.

Guidelines issued by the Teaching and Examination Commission, approved on 28.08.2023 by the Faculty Assembly of the Medical Faculty of the University of Basel.