

Attachment B
to the Bylaws ("Ordnung") of the Berlin Mathematical School (BMS)

Regulations for Study at the BMS

These Regulations describe the program of study at the Berlin Mathematical School (BMS), as well as the special duties, and rights of BMS students.

The regulations for degree programs at the cooperating universities are not affected by these BMS Regulations; please refer to the regulations for the Master's and Ph.D. degrees at the Freie Universität, the Humboldt Universität and the Technische Universität Berlin.

It is the declared goal of each BMS student to obtain a Ph.D. at one of these three universities. Upon successful graduation from the BMS study and research program, a special Certificate of Excellence will be awarded.

Study Program

The BMS study program for Phase I includes two one-semester basic courses in each of the following seven fields of study:

1. Differential geometry, global analysis, and topology
2. Algebra and number theory, algebraic and arithmetic geometry
3. Probability theory and financial mathematics
4. Discrete mathematics and geometry
5. Linear, nonlinear, and combinatorial optimization
6. Numerical analysis, scientific computing, and visualization
7. Applied analysis, mathematical physics, and dynamical systems

As spelled out in the Bylaws, the BMS executive board can amend or supplement this list of fields of study.

The basic courses, listed in the Attachment, are meant to give an introduction into the respective research fields and to illuminate interdisciplinary connections and applications, modern trends and current problems. They should give students the necessary foundations to enable them, after the completion of Phase I, to continue directly into the research-oriented dissertation phase.

Each basic course meets for four hours of lectures per week, accompanied by a two-hour tutorial as well as homework assignments. Each basic course will be offered at least once each year (one in the winter and one in the summer semester for each field of study).

Every semester, in addition to the basic courses, there will be advanced courses offered in each field of study. Before the end of any given semester, the list of courses for the following semester will be posted on the BMS website. These courses are meant to bring students up to speed with current research in the given field and thus enable them to do independent research.

These basic and advanced courses are BMS courses, and will normally be held in English. They are open to all interested students in Berlin.

In addition to these courses, the BMS plans to offer summer schools and intensive courses, often organized in conjunction with one of the Research Training Groups (RTGs) or International Max Planck Graduate Schools (IMPGSs). The BMS Fridays form another integral part of the BMS study program. Besides regular colloquia and seminar lectures, BMS Fridays often include workshops on "soft skills", such as communication techniques, rhetoric, mathematical typography, or writing skills.

Successful Completion and Grading of Courses

In order to successfully complete any of the courses above, BMS students have to pass a graded examination. The type and content of the exam will be fixed by the professor in charge and will be announced in the first lecture. Examinations are to be graded according to the scale below (s. Grading of Examinations). Students will receive a written statement of their grade. Grades will be sent to the BMS examination committee, the composition of which is controlled by the BMS Bylaws.

Upon request, the examination committee can grant credit for non-BMS courses. In this case the examination committee also determines how to translate the grades. The examination committee can delegate these decisions to authorized representatives.

Phase I

The admission committee assigns a mentor to each incoming BMS student according to his or her background and interests. The mentor advises the student about the program of study and supervises his or her success. The student meets with the mentor on a regular basis -- at least once per semester -- to evaluate progress and plan further study. At the end of each semester, each student is obliged to write a report about his or her activities. These reports serve as the basis for the progress evaluation by the mentor, and will be forwarded to the BMS executive board.

Course Requirements

Each Phase I student must name a field of concentration, usually one of the seven fields of study listed above. The minimum requirements for Phase I are the successful completion of at least five basic courses, plus at least two advanced courses, one of which must be a seminar that leads to a written report. Of these seven courses, at least two must be in the student's field of concentration.

Qualifying Examination

Upon completion of the course requirements above, Phase I students can apply to the examination committee to take the qualifying exam; this will normally be done during the fourth semester of Phase I.

In special cases, where a student has completed equivalent courses elsewhere before arriving at BMS, the student together with the mentor can apply to have these count towards the course requirements.

The examination committee makes a decision about each application based on the documented completion of the course requirements. Criteria for the decision include sufficient breadth of content and an average grade of at least "good" (s. Grading of Examinations). If the decision is positive, the committee sets a date for the qualifying examination and names the examiners; the group shall consist of at least three examiners, chosen from the BMS faculty.

The qualifying examination -- a prerequisite for entering the dissertation phase -- is a 90-minute oral exam. The exam covers the student's field of concentration (according to the courses completed in this field) as well as the content of one other course not from the field of concentration. The examiners and the student will agree upon the scope of the exam in advance.

Upon passing the qualifying exam, the student will be admitted to Phase II of the BMS and imposed admission conditions will be regarded as completed. The BMS One-Stop Office will inform the responsible offices at the respective university if necessary with the help of the Ph.D. boards ("Promotionsausschüsse").

Should a student fail the qualifying exam, one further attempt will be allowed.

Phase I of the BMS should usually be completed within three to five semesters.

The BMS will work together with the relevant departments of the three universities to ensure that interested students can obtain a Master's degree. Students who fail a final attempt at the qualifying exam will cease to be members of the BMS.

Phase II

Students are admitted to Phase II via the qualifying examination. Student who already have a Master's degree or equivalent (e.g., a German Diplom in Mathematics), can apply directly to Phase II and be admitted by the admission committee according to the selection criteria.

Upon admission, students who wish to enter Phase II must notify the BMS executive board in writing; they also must apply for admission to the Ph.D. program of the mathematics department at one of the cooperating universities, according to the respective Ph.D. regulations ("Promotionsordnungen"). Together with the mathematics departments of the three universities, the BMS will establish procedures to simplify admission formalities for BMS Phase II students. The BMS executive board can expel students who do not apply for admission to one of the Ph.D. programs in a timely manner.

Dissertation and Supervision

During Phase II, students work on research for their dissertation. Each Phase II student has a member of the BMS faculty as thesis advisor. In the case that this advisor is not a permanent member of the BMS faculty (e.g., is a Privatdozent or Juniorprofessor), a secondary advisor with permanent status will be named.

The student and the advisor will develop a study and research plan that defines the research goals. They will meet at least twice per semester to evaluate progress and to adapt the study and research plan.

In addition, each student will have a mentor -- different from the thesis advisor -- appointed by the admission committee following the student's suggestion. The mentor is available to help the student with any problems that may arise.

Should the advising relationship end, for instance because the advisor takes up employment at another institution, or for other reasons as spelled out in the relevant Ph.D. regulations, the BMS will appoint a new advisor.

Study Program

Each semester, the student and the advisor will decide on an individually structured program of study and record this in writing. In the first two years of Phase II, students should attend at least one, and preferably two, advanced courses per semester. Alternatively, the study program can, for instance, comprise participation in the structured program of one of the certified units (RTGs and IMPGSs) of the BMS.

Students are required to advance their knowledge, not just in their own field of concentration, but also in a broader spectrum.

Participation in the additional offers of the BMS (summer schools, workshops, etc.) is desired; it is also desired that Phase II students act as tutors for BMS basic courses and thereby gain teaching experience. Regular attendance at BMS Fridays is expected.

Completion of Phase II

The final examination or defense of the dissertation is conducted according to the relevant Ph.D. regulations ("Promotionsordnungen") of the respective university. With the award of the Ph.D., student membership in the BMS ends.

The BMS examination committee evaluates the achievements of the student in the dissertation and final examination and decides whether the student fulfills the BMS requirements to be awarded the additional BMS certificate of excellence. The certificate of excellence can be awarded, if

- 1) all referees confirm the extraordinary quality of the dissertation,
- 2) the student regularly attended BMS events, such as BMS Fridays or Soft Skill Trainings.

If the exam committee views the requirements as fulfilled, the Board will make the final decision to award the certificate of excellence.

Phase II of the BMS should usually be completed within four to six semesters.

Grading of Examinations

The following grades are to be used for examinations:

1 = very good -- outstanding performance

2 = good -- performance significantly above average

3 = satisfactory -- performance satisfying average expectations in all respects

4 = fair -- performance satisfying minimal expectations despite faults

5 = failure -- performance with significant faults, not satisfying expectations

To differentiate between performances intermediate grades between 1.0 and 4.0 can be given by decreasing or increasing the grade numbers by 0.3. Allowed grades are:

1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	5.0
very good		good			satisfactory			fair		fail

In addition to these grades, letter grades should be given. For this the following table is to be used:

1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	5.0
A	A-	B+	B	B-	C+	C	C-	D+	D	F

Attachment

List of basic courses

Field of study 1:

- Analysis and geometry on manifolds
- Differential Geometry

Field of study 2:

- Commutative algebra
- Algebraic geometry

Field of study 3:

- Stochastic processes I: discrete time,
- Stochastic processes II: continuous time

Field of study 4:

- Combinatorics
- Geometry

Field of study 5:

- Linear and integer programming
- Nonlinear optimization

Field of study 6:

- Numerical methods for ODEs and numerical linear algebra
- Numerical methods for PDEs

Field of study 7:

- Dynamical systems
- Partial differential equations

Additional basic courses:

- Complex analysis
- Functional analysis
- Topology