FORMAL REQUIREMENTS AND ADMINISTRATION OF DOCTORAL STUDIES
Version: Released and applicable since 1st August 2019 (last update: December 2020)

PhD programme: **Mathematics and Statistics (Matematika a statistika)**
Guarantor/Doctoral Board head contact: **Martin Kolář,** mkolar@math.muni.cz

General requirements for all students in the programme (please see detailed requirements for the Individual Study Plan in the detailed table below).

Mandatory courses: *checked by Dean's Office*

XD100	**Ph.D. thesis / Příprava dizertační práce**	*each semester (25 ECTS for semesters 1-4, 30 ECTS for semesters 5-8, 20 ECTS for semesters 9+)*
	Programme seminar	*enroll a research seminar according to the specialization for all 8 semesters of standard study duration (with exception of stay abroad)*
XD106	**Lecture in the foreign language / Odborná přednáška v cizím jazyce**	*Minimum one-time (2 ECTS)*
XD102	**Teaching Assistance / Pomoc při výuce**	*2 teaching hours per week during semesters 1-4. 4-times (2 ECTS per semester) during semesters 1-4.*
	Placement Abroad / Zahraniční pracovní pobyt	*Minimum 1 month stay, min. once during studies (usually 5 ECTS/month), requirement given by law* Instructions for recognition of Placement Abroad: https://www.sci.muni.cz/en/students/go-abroad/recognition-of-stay-abroad (the recognition is done via IS application Internship and Stays, by creating record of the stay and request for recognition; the course is then registered by Dean's Office)

Theoretical courses and all other requirements: *checked by the Head of Doctoral Board / Head of Doctoral Committee*
Theoretical courses – minimum 4 during semesters 1-6

(*) Requirements for theoretical SDE:
Theoretical preparation for SDE
The time (semester) for SDE will be specified individually in the ISP, reflecting previous study history of the student. The 4 obligatory theoretical courses have to be passed before taki ng the SDE.

Elements of the ISP		Milestones and their check					
		Enrolment to studies (Before semester 1)	**End of Semester 2**	**End of Semester *4***	**End of Semester 6**	**End of Semester 8 (Theoretical State Doctoral Exam, SDE *)**	**End of Semester 8 (Preparation for PhD defence)**
(A) research and development activities (ca 75 % of workload)	1. **Research, dissertation project,** literature search of the actual state of the topic, planning and the scientific activity itself 60%).	Define framework topic of your PhD project with your supervisor for enrolment. CHECK: Dean's office [enrolment] XD100 for each semester (25 ECTS for semesters 1-4, 30 ECTS for semesters 5-8, 20 ECTS for semesters 9+] CHECK: Dean's office	Present "research project" for your PhD study in front of the Doctoral Board. CHECK: Doctoral Board	No formal check needed	No formal check needed		Submit PhD thesis according to instructions of Doctoral Board, format according to SCI MUNI requirements CHECK: Doctoral Board, Dean's office
	2. **Publications** (thesis should be based on at least one original paper demonstrating quality and independence of the student (10%)	No formal check needed	No formal check needed	No formal check needed	No formal check needed		The dissertation should be based on original results, published or accepted for publication. It is expected that IF of the journals is above the median in the given field. Possible exceptions have to be approved by the Doctoral Board CHECK: Doctoral Board [Thesis].
	3. **Presentation** of results on scientific seminars, symposia, conferences etc., including preparation of talks and/or poster presentations (5%)	No formal check needed	No formal check needed	No formal check needed	No formal check needed		At minimum one documented oral presentation in English to appropriate scientific audience, preferentially international conference. CHECK: Dean's office [XD106]

(B) Specialized courses and theoretical preparation (15%)	4. **Theoretical courses,** preparation to the state doctoral exam – SDE (10%)	Identify student's knowledge gaps and what should be learned for SDE. Plan corresponding courses, trainings for the first two years. Consider courses at MU or outside. Minimum 4 credited courses are required. Selection can be changed/updated for each semester. CHECK: Supervisor	No formal check needed	No formal check needed	Successfully pass at minimum 4 credited theoretical courses. CHECK: Doctoral Board	Successfully pass at minimum 4 credited theoretical courses. CHECK: Doctoral Board
	5. **Doctoral seminars** (5%)	Enrol the specialization department seminar in each semester 1-8	No formal check needed	No formal check needed	No formal check needed	Get credits for the specialization seminar for all semesters when student works at MU in Brno. Semesters when student is at international stay abroad are excluded. **CHECK: Dean's office [IS.MUNI]**
(C) International experience and competitiveness	6. **Further improving of English competences** (attending courses, seminars, conferences, writing publications, all in English).	No formal check needed	No formal check needed	No formal check needed	No formal check needed	No formal check needed CHECK: Dean's office [XD106]
	7. **Stay or internship abroad** - mandatory participation in international cooperation.	No formal check needed	No formal check needed	No formal check needed	No formal check needed	Minimum is 1 month stay abroad CHECK: Dean's office [stay abroad in IS; XD110]
(D) Pedagogical competences	8. **Teaching assistance** - classrooms, exercises, advising undergrad students and comparable.	2 teaching hours (or equivalent teaching assistence load) per week during semesters 1-4.	No formal check needed	CHECK: Dean's office [IS; XD102 for 4 semesters]	No formal check needed	

(E) Other transferrable skills.	9. **Career development** - preparation and management of projects, scientific writing, communication, other soft-skills.	No formal check needed Check offers of PHD TRAINING SCHOOL and outside of MU	No formal check needed	No formal check needed	No formal check needed		No formal check needed

Mathematics and Statistics - Recommended regular theoretical courses

Autumn semester:

M7111 Topics on mathematical modelling
M7150 Category theory
M7180 Functional analysis II
M7250 Semigroups and formal languages
M7300 Global analysis
M7350 Algebra III
M7986 Statistical inference I
M9140 Theoretical numerical analysis
MA750 Probability theory
MA850 Statistical Inference for multivariate data
M9901 Theory and practice of spline smoothing
M7777 Applied functional data analysis
M7PNM1 Advanced numerical methods I M9121
Time series I
M8130 Algebraic topology
M8140 Algebraic geometry

Spring semester:

M0150 Difference equations
M0170 Cryptography
M6800 Variational calculus
M7110 Differential geometry
M7160 Ordinary differential equations

M7230 Galois theory
M81B0 Mathematical models in biology
M8986 Statistical inference II
M9211 Bayesian methods
MF002 Stochastic analysis
M8PNM2 Advanced numerical methods II
M7960 Dynamical Systems
MF004 Mathematical models in finance
M8300 Partial differential equations
M8350 Algebra IV

Other recommended one-time courses will be announced for individual semesters.