

FORMAL REQUIREMENTS AND ADMINISTRATION OF DOCTORAL STUDIES

PhD program: **Life Sciences**

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(fully applicable to students enrolled in the academic year 2019/2020 and following; applied adequately to previously enrolled students)

Detailed requirements for the Individual Study Plan (ISP) are described in Table. Here in brief:

- **Semestral activities recorded as S5007** – each semester
(recommendation: 20 ECTS for semesters 1-4, 25 ECTS for semesters 5-8, 20 ECTS for semesters 9+)
- **Theoretical (hard skills) courses** – a minimum of four courses (recommendation: fulfil during semesters 1 – 4)
- **Soft skills courses** - a minimum of three courses (recommendation: fulfil during semesters 1 – 6)
- **Handling chemical substances C7777** – obligatory in the 1st year of study for everyone. Since 2nd year of study, obligatory for experimental theses, facultative for students with a theoretical dissertation project (zero ECTS)
- **Field seminar S5005/S5003** – obligatory for all 8 semesters of standard study duration (except stay abroad)
- **CEITEC Friday Seminar S5010** – obligatory in the 1st and 3rd semester (autumn)
- **Lecture for the scientific community S5006** – minimum once during the study
- **Scientific publication S5008** – obligatory, once during the study
- **Stay abroad XD110** – minimum one month in total during the study (ECTS according to faculty rules), alternatively (after approval of doctoral board) participation in international creative project with results published or presented abroad, or direct participation in international cooperation
- **Teaching assistance S5009** – minimum four times during the study (a maximum of 150 hours in total during study)

(*) Requirements for theoretical SDE and PhD defence:

SDE, thesis, as well as the PhD defence, are performed in English.

SDE is followed by the defence of PhD thesis the same day.

For SDE, the supervisor, in co-operation with the Doctoral committee, identify three general topics that do not cover the topic of the dissertation work (they may touch but not build on it). The student is acquainted with the specified topics and, according to his / her choice, prepares a presentation of about 10 minutes for one of them. The presentation will be followed by a discussion on the chosen topic, as well as questions covering the area of the given discipline, based on the syllabus of the topics for the state doctoral examinations.

The PhD defence is given by 20 min presentation of results of the doctoral project, followed by a discussion.

Individual study plan elements		Milestones			
		Enrolment to studies (Before semester 1)	End of Semester 2	End of Semester 4	End of Semester 8 (Theoretical State Doctoral Exam - SDE, PhD defence *)
(A) research and development activities	1. Research, dissertation project , literature search of the actual state of the topic, planning, and the scientific activities itself	Define the framework topic of the PhD project with the supervisor for enrolment. CHECK: Dean's office [enrolment] S5007 for each semester (20 ECTS for semesters 1-4, 25 ECTS for semesters 5-8, 20 ECTS for semesters 9+) CHECK: Dean's office [IS.MUNI]	Submit a detailed "research project" for PhD work containing Background, Research hypothesis and objectives, Approach-methods, Timeline of foreseen activities, Expected outcomes (publications). CHECK: Doctoral Committee, [Submitted project in ISP in IS.MUNI]	No formal check needed	Have all other requirements fulfilled (see below in this column) submit the application to theoretical Doctoral State Examination and to Doctoral Thesis Defence . The application must include PhD thesis submitted in the IS MU according to instructions of the Doctoral Board and in a format according to SCI MUNI requirements. Doctoral board organizes the SDE and the defence further). CHECK: Doctoral Committee [Thesis], Dean's office
	2. Publications (thesis should be based on at least one first-author publication in Q1 demonstrating the quality and independence of the student)	No formal check needed	No formal check needed	No formal check needed	At least one publication - minimum criteria: One student's first-author paper published in IF-journal in 1st quartile in the given field of study (ISI WOS). In other cases, at least two other publications with IF in Q1 or Q2 of which student should be the co-author. CHECK: Doctoral Committee Dean's office [S5008]
	3. Presentation of results on scientific seminars, symposia, conferences, etc., including preparation of talks.	No formal check needed	No formal check needed	No formal check needed	At least one documented oral presentation in English to appropriate scientific audience, preferentially international conference. CHECK: Doctoral Committee, Dean's office [S5006]

(B) Specialized courses and theoretical preparation	4. Theoretical courses , preparation to the state doctoral exam – SDE	Identify student's knowledge gaps and what should be learned for SDE. Plan courses, trainings for the first two years. Consider courses at MU or outside. Minimum four credited courses are required. Selection can be changed/updated for each semester. C7777 Handling chemical substances (obligatory in autumn semester of the 1st year of study) CHECK: Supervisor	CHECK: Doctoral Committee, Dean's office [C7777]	Successfully pass at a minimum of four credited theoretical courses. CHECK: Doctoral Committee, Dean's office [IS.MUNI]	Not relevant anymore, all requirements fulfilled before.
	5. CEITEC Friday Seminar	Enroll S5010 (obligatory seminar in 1 st and 3 rd semester) CHECK: Student	No formal check needed	CHECK: Doctoral Committee, Dean's office [S5010]	Not relevant anymore, all requirements fulfilled before.
	6. Field seminar	Enroll S5005/S5003 (obligatory seminar in all semesters during the standard study duration) CHECK: Student	No formal check needed	CHECK: Doctoral Committee, Dean's office [S5005/S5003]	Get credits for S5005/S5003 for all semesters when the student works at MU in Brno. Semesters, when the student is at international stay abroad, are excluded. CHECK: Doctoral Committee, Dean's office [S5005/S5003]
(C) International experience and competitiveness	7. Further improving English competences (attending courses, seminars, conferences, writing publications, all in English).	No formal check needed	No formal check needed	No formal check needed	At least one documented oral presentation in English to appropriate scientific audience, preferentially international conference. CHECK: Doctoral Committee, Dean's office [S5006]
	8. Stay or internship abroad - mandatory participation in international cooperation.	No formal check needed	No formal check needed	No formal check needed	Minimum is one-month stay abroad in total. Alternatively (after approval of doctoral board): participation in international creative project with results

					published or presented abroad, or direct participation in international cooperation. CHECK: Doctoral Committee, Dean's office [XD110]
(D) Pedagogical competences	9. Teaching assistance - classrooms, exercises, advising undergrad students, and comparable.	Up to 150 hours through the entire doctoral studies. Recommend: pass during the first four semesters. CHECK: Student	No formal check needed	CHECK: Doctoral Committee, Dean's office [S5009]	Not relevant anymore, all requirements fulfilled before.
(E) Other transferrable skills	10. Soft skills courses - Career development - preparation and management of projects, scientific writing, communication, other soft-skills.	Plan courses, trainings. Consider courses at MU or outside. Minimum three credited courses are required. Selection can be changed/updated for each semester Recommend: pass during first six semesters. CHECK: Student	No formal check needed	CHECK: Doctoral Committee, Dean's office [IS.MUNI]	Successfully pass a minimum of 3 credited soft skills courses CHECK: Doctoral Committee, Dean's office [IS.MUNI]

Recommended theoretical courses (an indicative list only)

Field Structural Biology	Field Bio-omics
S1001 Chemical properties, structure, and interactions of nucleic acids S1002 Chemical properties, structure, and interactions of nucleic acids practical S1003 Structural and molecular biology of RNA S1004 Methods for structural characterization of biomolecules S1005 Theoretical Concepts of Biological Magnetic Resonance S1007 Doing structural biology with the Electron Microscope S2004 Methods for Characterization of Biomolecular Interactions – Classical versus Modern S2005 Methods for characterization of biomolecular interactions – classical versus modern, practice S3001 Trends in bioanalytical instrumentation S3002 Nanobiotechnology C6770 NMR Spectroscopy of Biomolecules I C6775 NMR Spectroscopy of Biomolecules II C7270 Structural biology methods C7271 Structural biology methods practical C7995 Practical NMR Spectroscopy of Biomolecules C9087 Computational Chemistry for Structural Biology CG030 Structure and Function of Protein Complexes FA602 Biophysical aspects of Structural Biology	S2002 Methods in plant cytogenetics and cytogenomics I. - practical course S2003 Methods in plant cytogenetics and cytogenomics II. - practical course S2006 Fluorescence methods in life sciences - a journey from molecules to cells S2007 Fluorescence methods in life sciences - practice S2008 Developmental and Cellular Biology of Plants S2010 Developmental biology S2011 Hormones in plant development S2012 Applying Mendel's laws of genetics to plant biology in the lab S2015 Synthetic Biology S3001 Trends in Bioanalytical Instrumentation S3002 Nanobiotechnology CG030 Structure and Function of Protein Complexes

Recommended soft skills courses (an indicative list only)

S4001 International Performance S4002 Law, Ethics and Philosophy of Science S4010 Science Communication Course: Present Your Research Results with Confidence C2110 UNIX and programming PRF j20xx PREFEKT D01 Publish or perish: The art of research and scientific writing S5040 Publish or perish: The art of research and scientific writing practical course
